



AND THE MILLING ENGINEER.

Fourteenth Year.—No. 10.

MILWAUKEE, OCTOBER, 1889.

Subscription Price, \$1.00 Per Year.

STILWELL & BIERCE MFG. CO.

—* DAYTON, OHIO, U. S. A. *

MILLING ENGINEERS

Manufacturers of the Celebrated ODELL ROLLER MILLS and a full line of

Flour and Corn Mill Machinery.

MILLS BUILT ON THE

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Contracts taken for mills of any size, large or small, and results GUARANTEED.

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FOR 1890-'91

Will be issued about March 1, 1890. Price Ten Dollars. It will be the most complete of any we have yet published, and will possess many new and valuable features. Send in your orders now to be placed on file. No payment required until delivery of the work. See editorial page.

Perfect in Construction and Results!

THE RICHMOND

Grain-Cleaning-Machinery

AND

BRAN DUSTERS

TESTIMONIAL.

QUINCY, ILL., March 1, 1889.

THE RICHMOND MFG. CO., Lockport, N. Y.:

Dear Sirs:—We have been using six No. 5 Richmond Horizontal Scourers and Polishers for upwards of six months, and after a thorough test are pleased to report that we are entirely satisfied with them. They work perfectly and require less power than any Scourers we have ever used. You may

refer to us at any time, and if parties with whom you are negotiating will take the trouble to come and see us, we believe we can convince them your machines are the best in the market. These machines seem to be perfect in their construction and results, and we assure you of our thorough appreciation of their merits.

Yours very truly,

TAYLOR BROS. & CO.

RICHMOND MANUFACTURING CO.

LOCKPORT, N. Y., U. S. A.

Hughes Bros. Steam Pump Co.,
CLEVELAND, OHIO.

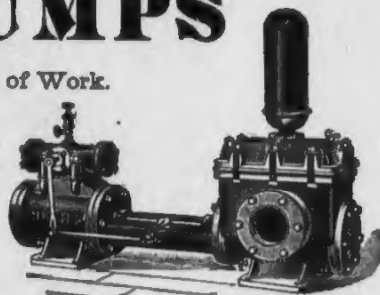
Builders of Single and Duplex

STEAM * PUMPS

Of Every Description for all kinds of Work.

Satisfaction Guaranteed.

Send for 1888 Catalogue.

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"WESTERN"
MILL SHELDER.

The most Compact, Durable, Best Sheller and Best Cleaner.

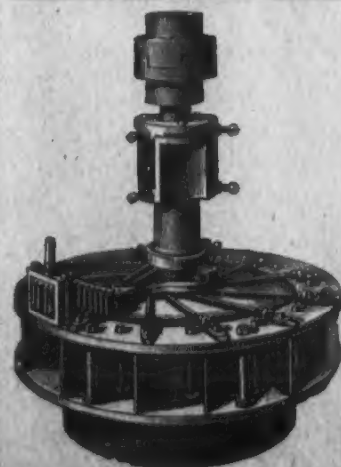
Takes up but little room, runs at low rate of speed, requires no attention. It is in every respect the

Best Sheller ever offered to the Public.

Please mention this paper. Write for full particulars to

UNION IRON WORKS, - DECATUR, ILL.

Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



Leffel Water Wheel,

Made by JAMES LEFFEL & CO.

The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

Write us for NEW PRICES before buying elsewhere. New shops and New Machinery are provided for making this Wheel. Address,

JAMES LEFFEL & CO.,

Springfield, Ohio or 110 Liberty St., New York.




EDW. P. ALLIS & CO.




Mill Builders and Mill Furnishers,
RELIANCE WORKS, - - MILWAUKEE, WIS.

SPECIALTIES:

Gray's Noiseless Belt Roller Mill.

Gray's Improved Centrifugal Reel. 

 Gray's Improved Flour Dresser.

The Reliance Purifier.

∴ PLEASE REMEMBER THAT ∴

NOT ONE of the above-named machines was ever taken out of any mill in America, large or small, because of failure to do its work properly. All statements to the contrary are made either from misinformation or from a deliberate intention to mislead.

EVERY MILL built by us during the last two or three years, including the largest and best built in America in that period, uses this line of machines and gives them an emphatic endorsement.

THIS LINE OF MACHINES was selected by the Duluth Imperial Mill Co, for its splendid 2,000 bbl. mill, after a most thorough and exhaustive investigation in Minneapolis and elsewhere, as being unquestionably the best the market affords. This was in the face of every form of misrepresentation that could be used against our machines.

LARGE ORDERS for our Rolls, Reels and Purifiers are coming in daily from the leading mills in Minneapolis during their annual shut-down for repairs. That shows what is thought of our work in the greatest milling center in America.

THE VALUE of any machine or system can be gauged to a nicety by the bitterness and unscrupulousness of the warfare against it by would-be rivals. Judged by this standard (and there is no safer one) our line of machines stands without an equal.

IT IS TO YOUR INTEREST to know the truth and to get the best. Let us know your wants and we can give you favorable figures, and tell you where you can see our machines in operation.



EDW. P. ALLIS & CO.



Mill Builders and Mill Furnishers,
RELIANCE WORKS, - - MILWAUKEE, WIS.

The United States MILLER

AND THE MILLING ENGINEER.

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GERM FLOUR AND GERM BREAD.

A Study for United States Millers and Bakers.

MR. W. A. THOMS, of Alyth, Scotland, a well known scientific as well as practical miller and baker of long experience recently wrote an article for *The British Baker and Confectioner* (London) under the above caption which we deem of sufficient interest to the millers and bakers of this country to republish, somewhat condensed however.

Germ Flour (patented in Great Britain by Richard Smith) is a mixture composed of three parts of wheat flour, of what is called "straight" grade, and one part of wheat germs which have not been crushed flat or ground to pieces, but which have been subjected to a cooking process at a temperature high enough to kill their vitality and diastatic power in dough and about 3 pounds per sack of 280 pounds of salt as a preservative. Thus it is ordinary flour, whole cooked wheat germs and salt. Great claims are made for this flour for its richness in fat, flesh and bone forming matters.

Mr. Thoms, further says—"From a baker's point of view, I am inclined to put germ flour high in the list of special preparations or products offered us for special breads, because it is so easy to make into bread of a high yield per sack, and its unrivalled flavor on eating, when properly made and thoroughly baked. But if the reader has a middle-aged or weak stomach that takes objection to hard work he will not eat this bread until it is at least 24 hours old.

Older age improves it; it keeps quite moist, cuts clean is then very easy of mastication and digestion. It is best baked in tins, because it does not stand up well, baked crusty.

I remarked that the germ bread is easy to make. It is best worked off rapidly with pressed yeast. Mr. Smith's own baking instructions are:—"Dissolve half an ounce of yeast in fully one quart of water, use no salt, and mix thoroughly with three and half pounds of germ flour all at once—no sponging. This should be light enough to put into the oven in less than one hour. Bake it well if you like it sweet."

These instructions have the merit of brevity, but omit several important points. They assume all yeast to be alike in fermenting power. Only the strongest yeast, would do the work satisfactorily with half-ounce to one quart of water; even with that yeast it would be better to use three-quarters of an ounce. I find one quart of water takes in more than three and a half pounds of germ flour, as at present sent out, to make a dough stiff enough. The heat of the water is not given, but it may be taken as 90° F. (But really the heat of the water here, as for other similar work,

depends on the heat of the flour, the heat of the bake-house, and the bulk to be fermented. The heat when mixed is the real guide; it should not exceed 70° to 76° for sponges and 76° to 80° F. for doughs. When these heats are used, and the sponges or doughs come away too slow, it is no proof that they are too cold, but that insufficient yeast has been used.) After doughing direct Mr. Smith says it will be ready for the oven in less than one hour. The wise baker does not work by time, but by feel. In this case, half an hour after mixing, the dough should have a good dry head up; in another fifteen minutes if the dough is sufficiently ripe or proved, it may be headed up again and scaled off at once, moulded, and put into oiled pans, which are set aside covered till the dough is light enough; then baked at 400° F. for, say, one hour and a half. Or a very weak sponge of the entire water and germ flour may be set away at 90° to 95° F., with the necessary yeast, and dough made when the sponge is full up; or sponge, a little stiffer than the former, half the water, and add the other half when the sponge turns, then dough. The dough

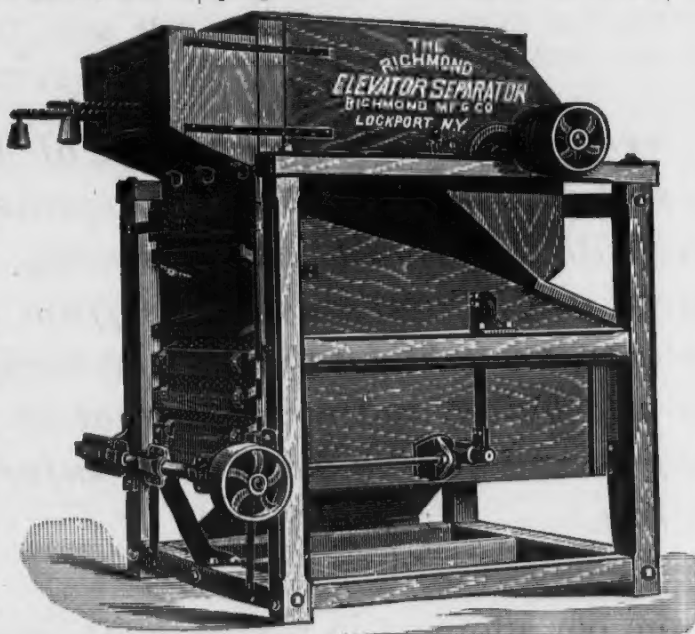
health biscuit from it, and I am using it for rusks. As rusks it is perhaps the most concentrated food offered for sale. I set away a ferment of, say, one quart of water at 90° F., 4 ozs. sugar, $\frac{1}{2}$ oz. pure yeast, and a little Hungarian flour. It rises high, and as soon as it turns it is poured into a set or bay, composed of 3 $\frac{1}{2}$ lbs. of patent germ flour, into which has been rubbed 12 ozs. butter; three or more eggs are added, and 1 lb of sugar, and dough made. No salt, because the germ flour contains enough of it. The dough is kept covered in a warm place and dry headed up three times, till sufficiently light to scale off. There will be over six pounds of dough, and it may be scaled off into six pieces, and these moulded into long loaf form, and placed across a clean tin, the loaves not quite touching, the end one pinned in with clean upset to prevent it spreading; then proved in a warm press or boxes and baked. The loaves will be in one piece when baked. They are allowed to cool till next day, then cut apart with a sharp knife; the loaves are then cut across into slices of about $\frac{1}{2}$ of an inch in thickness, put flat side on tins, and browned in a moderately warm oven.

Two sets of sieves go with each machine, with any size perforations that may be desired.

The grain is first fed into a hopper which is arranged with an automatic feed valve, which distributes the grain evenly in a thin sheet into the first separating spout, where it is met by a strong upward current of air, which removes chaff and light impurities, the dust passing into the fan, while the light chaff and other impurities are discharged into the screenings spout. The wheat is then distributed evenly over the full width of the sieves, which removes straws, headings, sticks, etc., also sand and small seeds, and from thence it passes into the last separating spout which removes such impurities as remain. The last separating spout is arranged with an automatic valve, which prevents any air passing into the spout with the wheat, which effects a more perfect separation than is possible in any other machine. The sieves are so arranged that they can be easily removed and changed for a finer or coarser set. The separating spouts of this machine are the full width of the sieves, which gives it a most perfect separation, and it is provided with a counter-balance, which gives it a steady and perfect motion.

The machine is built in a thoroughly workmanlike manner and of selected material.

In this machine is found a combination of all the elements necessary to constitute a perfect separator; it removes all dust and consequently can be placed in any part of the building. Full particulars, prices, etc., can be obtained by writing to THE RICHMOND MANUFACTURING CO., LOCKPORT, N. Y.



THE RICHMOND ELEVATOR SEPARATOR.

after sponging works much faster than dough made direct without sponge, and over-proving must be watched against. When over-proved, the bread does not taste so well nor cut so well. It cuts crumbly.

Certain millers are sending out samples of raw germs to bakers to mix with flour for germ bread. The germs are mostly in a crushed state, not whole as Smith's are, but the results, whether with whole or crushed raw germs, are not satisfactory. I have experimented somewhat with both, and have tried the germs in the proportion Smith uses, sponging with strong flour alone and adding the germs at doughing; the bread was neither so good in flavor, color, texture, or volume as that made of Smith's flour. The reason is: As soon as raw germ comes in contact with gluten at a fermenting temperature the germ exerts an intense dissolving action on the gluten; the dough softens quickly, rises badly, and sours if not hastened into the oven. This bread cannot compete with Smith's.

This patent germ flour is good for other things beside loaf bread. Mr. Torrance, of Edinburgh, is making an excellent

Or the dough may be scaled off and moulded up as for tops and bottoms, which I assume my readers are all familiar with, and I need not further describe.

I believe cooked germ or germ flour has come to stay, and the enlightened baker should make himself familiar with it, and what it is worth and capable of.

THE RICHMOND ELEVATOR SEPARATOR.

THE cuts shown herewith represent The Richmond Elevator Separator, manufactured by the Richmond Manufacturing Co., Lockport, N. Y., upon which have been made many valuable improvements, concerning which the manufacturers says "they are not found in any other separator, and they place this machine in the lead of all other separators now on the market." A serious objection to the elevator separators now on the market is, that the vibration of the sieves is so great that it is difficult to brace them sufficiently. In this separator that difficulty has been overcome, as they are now so well balanced that they require very little bracing.

VERY few are aware of the fact that crackers are the oldest form of bread. Fragments of unfermented cakes were discovered in the Swiss lake dwellings, which belong to the Neolithic age, an age dating back far beyond the received age of the world. Although this rude form of bread was early discarded for the fermented variety, yet in this, as in many other matters, it was found convenient to return to a discarded and apparently valueless process. Thin unfermented cakes were found to possess merits for special purposes. They would keep good for a great length of time, and they were convenient to carry, and thus afforded wholesome and nutritious food in a portable and convenient form. The simplicity of their making and baking was also a point in their favor.

THE American Machinist says: The cupola is, and is likely to remain, the only rejuvenator for machinery, and those who refuse to accept it must continue in the future as in the past, to go to the wall—which, of course, is a good thing for the tool builders.

Vortex Dust Collector Co.

To Our Customers and the Public!

In response to the comments and statements made by the Knickerbocker Co., of Jackson, Mich., we are compelled in self-defense to make this reply:

It is true that at a meeting in Chicago between our Mr. Ferdinand Schlesinger, president of the Vortex Dust Collector Co., and Mr. Knickerbocker, the president of the Knickerbocker Co., it was agreed that an amicable suit should be conducted for the purpose of determining the validity of the Knickerbocker Company's claim; and that we should permit a customer of ours to be sued in the Northern District of Illinois for the purpose of determining that question. It was further agreed that until the determination of that suit, our customers and our trade should not be annoyed by any threats or other action on the part of the Knickerbocker Company.

In accordance with that agreement we received the following letter from the Attorneys for the Knickerbocker Company, which conclusively shows the existence of such an agreement, although the agreement itself it was not thought necessary at the time to reduce to writing:

Law Office of JENNEY, MARSHALL & RUGER,
No. 15 Third National Bank Building.

SYRACUSE, N. Y., August 1, 1889.

VORTEX DUST COLLECTOR CO., Milwaukee, Wis.:

Gentlemen: Your letter of the 23d ult to the Knickerbocker Company has been referred by that company to me. Will you kindly inform me who at Chicago is using one of your machines, so that I may bring a suit there for the Knickerbocker Company, in accordance with the suggestion of your letter.

Yours truly,

E. S. JENNEY.

We have retained Messrs. Winkler, Flanders, Smith, Bottum & Vilas, of Milwaukee, to defend any and all of our customers in any suit that may be brought against them, and have instructed them to defend all such actions with the utmost possible energy. We further agree to indemnify and save and keep harmless any of our customers from the result of any infringement suit, or any other suit whatever, brought by the Knickerbocker Company on account of the use of any machine made or sold by us, and we hope that no one will refuse to buy one of our machines before writing us and getting particular information as to the responsibility and reliability of such guaranty.

We desire further to append a letter received from our attorneys in regard to the prospective litigation, and we consider ourselves safe from any ultimate loss at the hands of the Knickerbocker Co.:

F. C. WINKLER,
J. G. FLANDERS,
A. A. L. SMITH,
E. H. BOTTUM,
E. P. VILAS.

WINKLER, FLANDERS, SMITH, BOTTUM & VILAS,
Counselors at Law.

VORTEX DUST COLLECTOR CO., City.

Gentlemen: We have at your request looked into the matter of the claim of infringement made by the Knickerbocker Company, based upon the manufacture of your Vortex Dust Collector. The state of the art, in our judgment, discloses no sufficient foundation for the claims of the Knickerbocker Company.

We believe that an absolutely impregnable defense can be made in any action for infringement, based upon the manufacture or use of the Vortex Dust Collector, as made by you.

We acknowledge your instructions to appear and defend any and all of your customers in any action brought against them, and will cheerfully act in accordance with your wishes under your retainer. (Dictated.)

Yours very respectfully,

WINKLER, FLANDERS, SMITH, BOTTUM & VILAS.

Vortex Dust Collector Co., Milwaukee, Wis.

UNITED STATES MILLER
AND THE MILLING ENGINEER.

E. HARRISON CAWKER, EDITOR.

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For estimates for advertising, address the UNITED STATES MILLER AND THE MILLING ENGINEER.

[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, OCTOBER, 1889.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER AND THE MILLING ENGINEER. You will thereby oblige not only this paper, but the advertisers.

WE send out a number of SAMPLE COPIES of this issue. We solicit a critical examination of our Journal and invite you to subscribe. The price is one dollar per year. No premiums—no discount. Our November number will contain matters of special interest to millers which you will not find elsewhere.

F. L. GREENLEAF, ESQ., has just been elected President of the Minneapolis Chamber of Commerce.

THE tendency of the times in every department of trade is toward consolidation of business interests. In many places we know of millers who formerly owned but one mill that now own half a dozen or more. If this practice should become general, what will become of the small millers?

WE cordially invite inventors of any valuable device used in flouring mills or grain elevators, to send illustrations and descriptions thereof to the publisher of this journal for publication. To secure the insertion of such articles free of charge, they must be new and not have been published in any other milling journal.

THE Commercial Advertiser, of Buffalo, N. Y., very appropriately says:

"No other way can be devised by the wit of man to restore the American carrying trade than the universally accepted policy of national subsidies. We have given such subsidies to Pacific railroads and created a new republic. Why not lend a hand to Pacific and South American steamships, and recreate an American merchant marine."

THE COCKLE SEPARATOR CO., of Milwaukee, when informed by the Secretary of the Millers' National Association, that one of its members had been sued for infringement of patent on cockle machine and requested to defend the case in the interest of that member and all the rest of their customers, readily consented to do so and have employed able counsel to defend the suit. Millers should not forget this in their future dealings.

THE Pan-American Congress now being held in this country, will probably take such action as will be of the greatest importance to our manufacturers and producers. The milling interests will be ably represented by some very prominent members of the trade, and we have no doubt but the ultimate result to flour and grain exporters and United States manufacturers of mill and elevator machinery and supplies will be of great value.

THE letters of our Baltimore correspondent "Oriole" have attracted wide-spread attention in milling and grain circles. Some peculiarities of the Baltimore flour trade are explained in a vigorous manner. We have every confidence in the writer of these letters, knowing him to be a gentleman of wide experience and close observation. Our readers will find these letters

well worth perusing. In this number the transportation companies are "taken to task."

PRESTON LEA, ESQ., President of Wm. Lea & Sons Co., Wilmington, Del., has been appointed a member of the Committee on Pan-American Congress from the Wilmington Chamber of Commerce, and will co-operate with Mr. P. N. Macgill of Baltimore, Md., who has been commissioned as representative of the Miller's National Association, in bringing the flour manufacturing industry of the United States prominently before the delegates of the Congress.

A SUBSCRIBER writes asking if it would not be a good plan for milling journals to publish a price list of mill machinery and supplies. We think not. We believe it far better for millers to write to advertisers for their price lists and descriptive circulars, and when received to carefully place them on file for reference at a moment's notice. Of course, if you want some special patented machine you must make the best terms you can with the manufacturer or his agent.

WE take pleasure in calling the attention of our readers to the full page announcement of the Vortex Dust Collector Co. in this number. It is a business-like statement and deserves the attention and respect of the milling public. The Vortex Company have the confidence of the trade and merit it. They build a machine acknowledged to do as good work as any on the market and sell at a reasonable price and we are pleased to know are selling lots of them to the best millers in this country.

SUCH of our readers as have been of the opinion that the Millers National Association was of little consequence, will please note the fact that recently when suit was commenced against the well known Minneapolis milling firm of C. A. Pillsbury & Co. for an infringement of a patent on cockle machines, said Company simply turned over the documents to the Secretary, with request to take such steps for their protection as were necessary. The Association counsel takes all such matters in hand and defends or compromises such claims, as deemed best for the interests of members.

OUR London letter this month contains a good deal of interesting matter. Among other things, it indicates that there is a growing feeling of dissatisfaction among officers and members of the British Millers Association. If this is true it is to be regretted. Here, matters are entirely different. The only dissatisfaction manifest here is between a milling journal afflicted with "big-head" and its imitators and an officer of the Association, who persists in attending to his business by studying and working for the interests of the Millers National Association. The members and their officers are evidently working harmoniously together.

IF the American Miller and its journalistic henchmen have influenced millers to any considerable extent to keep out of the Millers' National Association, said millers must feel anything but kindly towards the influence that kept them out, now that patentees are commencing to shove in the patent infringement knife and twist it around, metaphorically speaking. Pecuniary disaster, to a greater or less extent will certainly result to millers who have been encouraged to keep out of the M. N. A.

Those who have allowed their membership to lapse, would doubtless now like very much to again get into the Association by paying up back dues, and thereby secure protection from prosecution by owners of certain patents. This cannot be done.

By becoming a member now, the miller will however secure the most ample protection

in the power of the Association against any new infringement suits and we know that there will be a number commenced in the near future. Millers should bear in mind that it is far easier for an organized body to fight or compromise a claim than for one person or firm to do so.

Patentees of good inventions have learned by experience that it is for their pecuniary interests to wait until the life of a patent which has been infringed generally, has nearly expired before commencing suit, and then if they are successful, their claims for damages will be proportionately heavy, for the patent will have been used for years.

CAWKER'S AMERICAN FLOUR-MILL AND GRAIN ELEVATOR DIRECTORY FOR 1890-'91.

THE above standard work will be ready for delivery in March, 1890. This will be the seventh directory of the flour and grain trade, issued by the publisher, and all who have used them, testify to their increasing accuracy and utility to the trade. Briefly outlined, the principal features will be as follows:

1. List of Flour Mill owners of the United States and Dominion of Canada, Post Office address, County and State, and where information is obtained capacity in barrels of flour per day of 24 hours, kind of power used (steam or water), roller or stone system. 2. Lists of Corn, Oatmeal, Rice, Rye Mills, etc. 3. List of Grain Elevators and Warehouses. 4. List of Millwrights. 5. List of prominent American Flour and Grain Brokers. 6. List of Foreign Flour and Grain Importers. 7. List of Mill Furnishers, etc. 8. Statistics valuable to the trade.

Communications from millers in all parts of the United States and Canada on any of the above mentioned points, will be thankfully received by the publisher. Further, any suggestions that will tend to add to the value of the work will be fairly considered. All letters concerning this matter should be addressed to E. H. Cawker, Milwaukee, Wis.

IS FLAX SEED GRAIN?

THE question above has excited considerable discussion especially among Minnesota dealers in flax-seed. We have received a number of letters from Minnesota parties asking for an opinion upon the subject. Our humble opinion is that the word "grain" as generally used, indicates such cereal products as are used for human food. We have endeavored to secure opinions from a number of parties, that should be considered good authorities. We addressed the following to the Secretaries of several State Agricultural Departments, and to the Secretary of the U. S. Department of Agriculture:

Milwaukee, Sept. 25, 1889.

DEAR SIR: Will you kindly give us your opinion on the following question: Is flax-seed, grain? There appears to be a difference of opinion on the subject. The Attorney-General of Minnesota has decided that it is, and is therefore subject to inspection under the public warehouse law of that State. Others maintain that grain in its general sense is such grain as is used for human food only. Awaiting your reply, we are Yours etc.

We have received the following replies: From United States Dep't. of Agriculture:

DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.,

Office of Assistant Secretary, October 2, 1889.

EDITOR UNITED STATES MILLER, Milwaukee, Wisconsin,

Sir:—Yours of September 25th, to Secretary Rusk is at hand, and has been referred to me to answer. You say that the Attorney General of Minnesota has decided that flax seed is grain and is therefore subject to inspection by the Minnesota Public Inspectors.

You ask, in short, would the Department consider flax seed grain? It is not our province to criticize the law of Minnesota, or question the correctness of official decisions, interpreting it. We may say, however, in a general way, that the technical commercial meaning of "grain" is, as interpreted by this Department, generally limited to the seeds of cereals, while the term "seeds" as applied to various oil seeds and grass-seeds is equally well understood and quite as definite in its significance. It may be that the law of Minnesota is susceptible nevertheless by some

peculiar phraseology to the construction given it by the Attorney General.

The law could put both classes of products together as it has done things much more incongruous. Yours truly

EDWIN STREETS, Ass't Secretary.

From Wisconsin State Agricultural Society:

WISCONSIN STATE AGRICULTURAL SOCIETY, Madison, Sept. 26th, 1889.

E. Harrison Cawker, Esq.,

Dear Sir—Yours of 25th at hand. I am of opinion that flax-seed is grain. The Secretary of Agriculture, Hon. J. M. Rusk, would probably settle the matter if referred to him. Respectfully Yours,

T. L. NEWTON, Sec'y W. S. A. S.

From Kansas State Board of Agriculture: Topeka, Kansas, Sept. 28, 1889.

EDITOR U. S. MILLER AND MILLING ENGINEER: Your favor of the 25th inst. is received.

"Is Flax seed Grain?" you ask.

Since this question is propounded I will answer it briefly, with no idea however that my opinion will settle the question.

All grain is seed, but all seed is not grain. For instance all grain possesses the principle of reproduction and therefore is seed. But seed used only for reproduction is not grain, such as apple, cherry, clover seed &c.

But when a seed possesses in addition to the principle of production qualities which render it valuable when manufactured into a given product, either as food for man or beast, it is certainly something more than seed, and when handled in warehouses the same as corn and wheat, it may be classed as grain and of course is subject to inspection.

But on the other hand it is true that in the general acceptance of the term, the word grain includes such products only as are used for human food.

This briefly is my opinion given freely for what it is worth. Yours truly,

M. MOHLER, Secretary.

TRADE NOTES.

MARSHALL BROS. of Dubuque, Ia., are building a patent Lime Extractor and Heater for steam boilers which is meeting with success wherever introduced. There is a good demand for such apparatus in the Northwest.

KEEFOOT BROS., Des Moines, Ia., have a model mill and elevator supply house. They carry a large supply of goods in their line, and are able to fill orders promptly, and at reasonable prices. Iowa millers and elevator owners know this to be a fact.

THE Novelty Iron Works, Dubuque, Ia., are running to full capacity. They build engines, make castings, etc., and do a large amount of work for flouring mills and elevators. They also make a specialty of building oat-meal mills. They are well located, having facilities for shipping both by rail and river.

THE Iowa Iron Works Co., Dubuque, Ia., have a plant occupying a whole block with railroad tracks direct to their doors. They do a general business in castings, engine building, saw and flour-mill machinery, steamboat work, etc. It is one of the solid institutions of that quaint and solid old city, Dubuque.

THE Des Moines Mfg. and Supply Co., Des Moines, Ia., is well located in the capital city of Iowa, and is kept crowded with work from all parts of the great west. Mr. Geo. I. Jarrett looks after the flour mill department, and he is kept very busy. The record of this company for mill building and remodeling this year is enviable.

THE JONATHAN MILLS MFG. Co., have removed from Cleveland to Columbus, O. In their new location they have one of the finest and best equipped plants for building special mill machinery in this country. The present officers of the company are as follows: L. C. Newsom, president; W. A. Hardesty, secretary and treasurer; Jonathan Mills, vice-president and general manager.

THE Flenniken Turbine Co, Dubuque, Ia., are filling a number of orders for their turbine wheels. They have also successfully built and furnished a number of short system mills in the West. They are about to place on the market a new roller mill of unique design, and a new reel, scalper and bolter. They have good facilities for doing a large amount of good work.

MESSRS. BEYNON & MURPHY, Watertown, Wis., are crowded with orders for their specialties and those who have introduced them speak highly of them. In these days of new inventions, they certainly can take pride in this success which they have attained. Their specialties are the Beynon Electric Alarm to announce and relieve "choke ups"; the Beynon Aspirator and the Beynon Adjuster for Rolls.

OUR BALTIMORE LETTER.

"Oriole" Makes Further Observations.

Our Correspondent Castigates the Transportation Companies.

AN INTERESTING LETTER TO MILLERS, FLOUR AND GRAIN DEALERS.

THE Baltimore letter in the September edition of the UNITED STATES MILLER created another furore in this locality. It was not only extensively copied and commended by the Press, but also the recipient of a hearty endorsement from the trade.

It is both gratifying and encouraging to have ones efforts accorded such a reception at any time, but more particularly when the subject matter, as in this case, augured just a revulsion of feeling.

We will give our readers a breathing spell this month before further exhuming the revolting evils which underlie and impede the progress and development of our market in order to touch briefly upon the present damnable practices of certain railroads leading to the seaboard. We refer now to the time consumed by them in the transportation of flour from the northwest to Baltimore.

No language is too strong to express the enormity of their actions. These roads forget that they are the servants of the people from whom solely they derive their rights, privileges and in fact their very existence.

But as it has become the rule in our domestic affairs that the servant is greater than his lord, so also have these public hirelings transcended their station as well, until now they have actually reached that point where they virtually control our business by refusing to furnish us with stock until it suits their pleasure to do so. These high and mighty officials consider it a great condescension on their part even to listen to complaints of patrons.

They would have us bow down to them and worship them and even lick their boots before daring to approach them upon a subject so momentous as the one under consideration. They have an idea that they run the universe and that mankind generally must needs stand down and out when they pass by.

Why should it take 35 and 40 days for flour to come from the Northwest to Baltimore? That is the question we wish to discuss. We can get no information on the subject at this end of the line, except that the delay is occasioned at the transfer stations.

It is claimed that by storing consignments at these points that the first stored oftentimes is the last to leave, and vice versa. If that is true then we can account for the outrageous delay that is experienced almost daily by our dealers.

When the transfer steamers arrive, they are frequently loaded before reaching those shipments which have been in store long before those which are taken aboard first, and consequently are left behind until the next trip. And if an accumulation should then follow in the meantime the same thing occurs again, thus leaving the oldest receipt in the shed indefinitely.

There is certainly nothing fair or just in such a proceeding.

Why can not this thing be worked upon the business principle of first come first served?

We have known of flour laying at Milwaukee for 30 days and after having been loaded on the transfer-boat to arrive here in 7 days thereafter. The whole trouble therefore is apparently at the transfer stations, so why not put on more steamers in the busy season, or else store the flour there differently?

Mills should urge at once the importance of correcting the abuse. Pillsbury and the Sidle Fletcher Holmes Co. of Minneapolis obviate the difficulty by keeping flour stored in the east. Competitors should either do the same or else patronize those roads only which guarantee despatch.

If mills and dealers would combine and "boycott" the roads which keep flour in transit so long, the trouble would soon disappear.

Merchants are sick and tired of paying sight drafts on invoices which are kept out for 30 days and more.

Besides losing the interest on the money, and the great inconvenience of the thing, they object most decidedly also to speculating to that extent on the market.

If all the receipts at the transfer stations could be regularly numbered as they arrive, and then loaded upon the boats exactly according to those numbers, we would have no more cause for complaint in the future.

If those interested will experiment with the plan for awhile we venture to say that it will be found adequate for the emergency.

The Baltimore flour market has ruled active, strong and higher since our last review.

Leading city mills have advanced prices 15 cents per barrel during the month and the whole market is correspondingly better. Dealers generally have anticipated wants

quite liberally through agents in lots to arrive.

Stocks, exclusive of those held by city mills, however aggregate only 44,000 barrels, as against 54,000 barrels for the same period a year ago.

Owing to the delay of stock in transit there is a great scarcity here now of all desirable grades of flour. Spot spring patents are particularly urgent, and in instances command a handsome premium over the mill price.

St. Louis patents range from \$4.85 to \$5.00 and straights \$4.85 to 4.60. The Kauffman Milling Co. is having the swing here at present in these goods for the reason that it is willing to undersell standard brands 10 to 15 cents per barrel.

Plant's and Stanard's agents are in the soup while this continues. Ohio, Indiana and Illinois patents, straights and clears range respectively from \$4.75 to \$4.90, 4.40 to \$4.65 and \$4.15 to \$4.30.

Choice winter extras are in good demand at \$3.75 to \$4.00.

Minneapolis patents have fluctuated considerably recently, and range today all the way from \$5.10 to \$5.40, which is a net gain of 25 cents per barrel on the best brands. Dealers however, will not entertain them at these figures here while country makes of equal quality can be had at prices ranging from \$4.85 to \$5.10.

Large transactions in Minneapolis stencils to arrive were effected by agents just prior to the advance, but until they have been absorbed new business is possible unless perhaps they should happen to decline to a point where it would prove tempting to anticipate again.

Spring bakers' have been relatively quiet during the month, the few sales recorded being mostly at old figures.

They do not all partake of the changes experienced by the better qualities. We quote them to-day however, at \$3.50 to \$3.75.

City mills are heavily over-sold on Rio extra at prices ranging from \$4.50 to \$4.75. Some 20,000 barrels having been placed at these figures. The West India trade, too, has bought freely of super at \$2.20 to \$2.25, and standard family at \$4.20 to \$4.30.

Quite a fleet of vessels from the tropics is due here now to load flour for these points. It has all been engaged, however, and will cut no figure whatever in current market values.

City mills also report a large demand from their local, southern and New England trade. It is exceedingly difficult for them to catch up with orders.

The general trade here takes no stock in higher prices for flour, but, on the other hand rather expects a slight abatement from present rates.

We quote the range of the flour market as follows:

Western Winter Wheat Super.....	\$2.50	@ \$3.00
" " " Extra.....	3.25	@ 4.00
" " " Family.....	4.15	@ 4.65
Winter Wheat Patent.....	4.75	@ 5.00
Spring " " ".....	4.85	@ 5.25
" " " Straight.....	4.25	@ 4.75
" " " Bakers.....	3.50	@ 3.75
Baltimore Best Patent.....	5.45	@ 5.75
" Choice.....	5.30	@ 5.60
" High Grade Family.....	5.20	@ 5.50
" Choice " Extra.....	4.95	@ 5.25
Maryland, Virginia and Penna. Super.....	2.50	@ 2.75
" " " Extra.....	3.00	@ 3.75
" " " Family.....	4.15	@ 4.65
City Mills Super.....	2.25	@
" (Rio Brands Extra).....	4.62 1/2	@ 4.75
Rye Flour.....	2.75	@ 3.00

The wheat market here has been excited and buoyant, since a month ago, and closes at this writing on the cash stuff about 4 cents above our last quotations. The options, however, show a gain of only 2 cents in the same period. The great disparity in price which existed between spot wheat in Baltimore and that of New York has disappeared entirely, leaving the two markets now in a relatively normal condition, with the difference as it should be. We have been doing considerable export business of late in wheat, and that explains the improvement noted.

Indeed some claim that all of the No. 2, Red Winter has been sold here, and that it will certainly go out of elevators this month. Clearances from the port show up remarkably well, and if there are really 300,000 bushels of contract wheat yet to go, our supplies for a fact will be materially reduced.

We know of no source from which to replenish them, either, while the west remains as high as the seaboard.

A vast amount of crossing has been done between this and the Chicago and New York markets. It looks like a good thing, and will doubtless prove profitable to those engaged in it.

The latest Government Report, which estimated the yield of wheat at 494,000,000 of measured bushels, caused the boys to jump on the market and pound values down regardless of consequences.

We fail to see that we have any more wheat to-day than we had yesterday, "Uncle Sam" to the contrary notwithstanding.

It was sufficient, however, for the wild-cat operators to sell on to their heart's content. It looked as though they intended to market the whole crop to-day at whatever it might bring, irrespective of what to-morrow might bring forth. These fellows evidently forgot that Government Reports do not fill short sales; that they do not make receipts good enough to grade; that they do not satisfy the foreign demand. Well, they will find it out soon enough without our telling them.

Some of our larger traders have flopped over to the bull side, and prefer now to buy on breaks rather than to sell on bulges.

We see nothing in the situation to change our faith in higher prices while the visible supply hangs where it is; the foreign demand continues, and values remain nearly 30 cents a bushel below the figures of last year. We will find too, that the estimated yield by measured bushels will far exceed the actual returns by weight.

Millers experience great difficulty in obtaining assortments suitable for requirements. Nothing desirable comes this way at the moment. Most of the western arrivals are out of condition as well as those from near-by points. Receipts are so limited that they practically amount to nothing.

STOCK OF GRAIN IN ELEVATORS THIS DAY:		
CORN.		
1 White.....	569	
2 ".....	131,276	
Yellow.....	5,898	
Mixed.....	85,090	
Steamer White.....	3,422	
" mixed.....	2,012	
Special Bin.....	23,909	
Total.....	251,164	
" 1888.....	72,239	
RYE.....	1,116	
" 1888.....	12,108	

CLOSING AND COMPARATIVE PRICES.		
Wheat.	Closing To-day.	Same time last year.
No. 2 Red.....	82 1/2 @ 83 1/2	108 @ 108 1/2
Spot.....	82 1/2 @ 83 1/2	108 @ 108 1/2
October.....	82 1/2 @ 83 1/2	110
November.....	82 1/2 @ 83 1/2	111 1/4 @ 111 1/2
December.....	82 1/2 @ 83 1/2	113 1/4 @ 114
January.....	82 1/2 @ 83 1/2	100
Steamer 2.....	76 1/2 @ 77 1/2	110 @ 120
Fultz.....	78 @ 88	112 @ 120
Lougberry.....	80 @ 88	

CLOSING AND COMPARATIVE PRICES.		
Corn.	Closing To-day.	Same time last year.
Mixed.....	40 @ 41 1/2	51 @ 51 1/2
Spot.....	39 1/2 @ 40	51
October.....	39 1/2 @ 40	46 @ 46 1/2
November.....	39 1/2 @ 40	46 1/2 @ 45 1/2
Year.....	39 1/2 @ 40	53 @ 55
January.....	39 1/2 @ 40	53 @ 54
Steamer.....	37 1/2 @ 38	
White.....	40 @ 42	
Yellow.....	40 @ 41 1/2	

FREIGHTS.—Grain freights are quiet, but very firm. Late free engagements nearly cover tonnage available at the moment, and there is a pause. Berth room Liverpool 5d.; Glasgow 3d.; Belfast 4d.; London 4d.; Antwerp 4d.; 3d., and Rotterdam 4d. @ 4 1/2 Havre 4d. Full cargo steam handy sizes, Cork f. o., October, 5d.; November, December, January 4d. Note engagement 1,000 qrs. steam to Bristol, November 4d., and charters S. S. Baltimore City 15,000 qrs. November, and S. S. Trevorian 13,000 quarters, November, both 5d. Cork, f. o. Also 20,000 bus. steam to Liverpool, October 5d., 4,000 qrs. do. Belfast, January 4d., and 3,000 qrs. do. London, October, 4d.

Grain charters have been immense here this week, aggregating more than the combined engagements in New York, Philadelphia and Boston, and we have no maritime exchange either.

ITEMS OF INTEREST TO THE TRADE.

H. A. Lederer, of S. P. Thompson & Co., who has been on an extended Western tour for his firm, returned home a few days ago.

J. S. Moore, formerly of Chicago, but now sub-agent for D. W. Carhart of New York, was in Baltimore this week representing the Daisy Roller Mills of Milwaukee.

M. H. Davis, secretary and treasurer of the Shelby Mill Co., of Shelby, O., has returned from his visit to Michigan.

A. A. Keene representing the Sidle Fletcher Holmes Co. of Minneapolis is back home from his trip to that city.

Rinehart, Childs & Co. are doing a whaling big business, and seem wholly unable to supply their ever increasing demand for "Jamestown."

C. Ruhl Sr. is confined to his house by sickness—His sons Henry and Conrad Jr. conduct the business in his absence.

Frank Boehmer, the popular jolly and handsome salesman of Louis Sinsheimer, wholesale flour jobber of Baltimore, has recently taken unto himself a wife.—May they both live long and prosper.

Mudge, Smith & Co., of Baltimore are rapidly pushing ahead of some of our oldest flour houses in point of business. Pluck, perseverance and integrity you know, will get there every time.

Statistician Wroth, otherwise known as "Our Harry," beat all the experts on his estimate of the new wheat crop. He came within 6,000,000 of the Government's estimate. This entitles him to a high seat in the synagogue of professionals.

S. C. Patterson has returned from a brief western trip in the interest of the BALTIMORE JOURNAL OF COMMERCE.

Short weight flour is complained of again. The miller who will persistently do that thing would steal the cents off a dead man's eyes, if he had a chance.

J. Hume Smith is said to have made considerable money on this crop of wheat. His business is that of a mixer.

E. N. Gardner & Co. have just finished decorating their offices very handsomely. The improvement was needed, and will doubtless add much to the comfort of their many customers.

Tate, Mueller & Co. will shortly clear another cargo of wheat for Rio to take the place of the one recently lost on the coast after being enroute but a few days.

There seems to be no let up in Peter New & Sons trade. They are always busy, and must of necessity be making money hand over fist.

Baltimore, Oct. 12, 1889.

DEAL'S STANDARD IMPROVED GRAIN TESTERS.

The illustration herewith shows at a glance one of the most useful and important and necessary implements that the grain buyer can have. When purchasing grain he can fill up his tester, (they are made of three sizes—one pint, one quart and two quarts,) weigh it quickly, read the weight per bushel and determine closely the amount of dirt, weed seeds, etc., con-



tained in a bushel of the grain from which the sample is taken and know just how much he ought to pay per bushel. This practical and useful implement is manufactured and sold by the H. J. Deal Specialty Co., of Bucyrus, O. Send for their latest folder giving a list of the specialties they sell.

THE AMERICAN MILL CO. OF NASHVILLE, TENN.

THIS company is about to greatly increase the capacity of their flour mill and also of their grain elevators. Messrs. E. P. Allis & Co., of Milwaukee, will do the work. The mill, when completed, will without doubt be the greatest winter-wheat mill in this or any other country. Referring to this matter the Nashville Herald, of Oct. 2, says:

In 1871 there was not an elevator in the city, and only two small mills, one owned by Noel & Plater and the other by the Reservoir Mill Co. So rapid was the increase in the business that in the year 1875 Mr. Noel purchased a tract of land running parallel with the railroad track, near Ewing avenue, and built an elevator with a capacity of 120,000 bus. The milling capacity of the firm has since been increased to 1,500 bbls per day, but even this has been found to be inadequate, and now these gentlemen propose to build a mill and elevator which will be the largest for winter wheat in the world and the third largest mill of any kind in the United States.

In addition to the capacity of the Noel mill, three other elevators are now in operation in the city, and yet the combined capacity of these elevators is entirely too limited to accommodate the quantities of wheat which seek a market here, and it is stated by the grain dealers that thousands of bushels of wheat are turned away for lack of storage room.

All the mills in the city are now running on full time, day and night, and are behind with their orders. The American Mill Co. will begin at once the construction of the buildings for the additional capacity and expect to have it in operation by next October. In the meantime the present mill will be run to its full capacity. J. E. Watson, representing the Reliance Works, arrived in the city yesterday and was busily engaged to-day in making the preliminary surveys for the erection of the plant.

ONE-HALF FARE TO MONTGOMERY.

On account of the Exposition the Queen and Crescent Route will sell excursion tickets to Montgomery, Ala., and return on Nov. 4, 8 and 12, at one fare for round trip from all coupon stations between Cincinnati and Junction City, inclusive. Tickets good for return for 20 days. The route is via Look-out Mountain. Three trains each way daily with Pullman Buffet and Sleeping cars.

THE publisher of the UNITED STATES MILLER is desirous of having the names and addresses of Head Millers, Millwrights and Head Engineers in all mills having a capacity of 150 bbls. per day or more.

SPECIAL STAMPERS OF SHEET METALS.

We do Stamping and Pressing of Sheet Metals for All Classes of Work. Also Tinning, Galvanizing & Japanning.

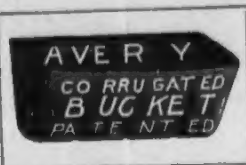
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SEAMLESS STEEL BUCKETS

INSIST on having this Bucket furnished when ordering.

Ask your dealer for the Avery Pat. Seamless Steel Elev. Bucket.

H. W. CALDWELL, General Agent,



CALDWELL PATENT.

We do not advertise Seamless Elevator Buckets and fill orders with "Placed Ones"

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The Link-Belt Machinery Co.

Are Prepared to Furnish Machinery and Appliances for

Transmission of Power

After the most approved Plans, by use of

**SHAFTING
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For Particulars and Estimates apply to them at

CHICAGO: 11 to 23 S. Jefferson St. **MINNEAPOLIS:** 200 to 202 Washington Ave. S.

Improve Your Scalping, and Thus Improve Your Flour

—BY USING THE—

NEW ERA SCALPER.

These machines are in use in many leading mills in the country and their work speaks for itself. Guaranteed in every respect and trial allowed if desired. One machine will handle four breaks in a 75 to 100 bbl. mill, or one break in a 500 bbl. mill. Also built two or three or four high, to handle break stock, chop and middlings.

—Read the Following. We Can Give You Equal Satisfaction—

MILROY, IND., Sept. 18, 1899.

SUPERLATIVE PURIFIER MFG. CO., Milwaukee, Wis.

Gentlemen: The machines bought of you—Scalper and Bran Duster—are at work, and have been for several days, and are doing the work splendidly and take very little power—in fact are working beyond my expectations. The cloths all came in good shape, and fit nice and neat. They are the nicest fitting cloths I ever put on a reel. I have increased the capacity of my mill 20 bbls. and am well pleased with the results.

Respectfully yours,

G. J. BICKHART & CO.



WRITE FOR CIRCULARS AND PRICES.

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MILWAUKEE, WISCONSIN.

ESTABLISHED 1846.

J. B. A. KERN & SON,
Merchant Millers,

Capacity 2,000 Barrels Per Day.

MILWAUKEE, WIS.

Manufacturers of Choice Minnesota and Dakota Hard Wheat Flour.

—RYE + FLOUR—

By most approved roller process, guaranteed the best and purest rye flour manufactured

WE INVITE CORRESPONDENCE FROM CASH BUYERS.

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Edition of Scientific American.

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[Short ads. inserted in this column for \$1 per insertion.]

PARTNER WANTED. A practical miller, owns a first-class water-power in Dunn County, Wis. It has rock bottom and rock banks. It is worthy of careful inspection. No mill within 20 miles. Would be plenty of custom trade. The owner has not sufficient means to build a mill and wants a partner with from \$4,000 to \$6,000 to take an interest with him. If you mean straight business, write or come and see
A. BELLACH,
Red Cedar Falls, Dunn Co., Wis.

PARTNER WANTED. A sober, industrious man, who understands the flour milling business, and has a capital of three thousand dollars. For particulars apply to
W. J. MILLER & Co., Ballinger, Texas.

WANTED. A position as head miller in a mill from 150 bbls. upwards, by a miller of over 20 years' experience in first-class mills; have been in charge of mills from 200 to 800 bbls. capacity for 12 years; have first-class references; 10 years in one mill. Address MILLER, care of U. S. Miller, Milwaukee, Wis.

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FOR SALE OR LEASE. Mill site and improved water power for sale or lease on good terms, or will turn the property in and take partnership in flour milling business with a practical man who can furnish additional capital required. Address,
F. P. BLAKE, Canon City, Colo.

FOR SALE OR LEASE. Fine elevator and milling property. A 150-barrel roller mill, located in central South Dakota; also two elevators, capacity 25,000 and 35,000 bushels; easy terms; small amount cash down, balance long time, low rate interest. Good crop of finest quality of wheat secured in this section. Investigation invited. Full particulars by addressing,
X. X. UNITED STATES MILLER,
Sep8t Milwaukee, Wis.

FOR SALE. A full roller process flouring mill, 100 barrels' capacity. Equipped with most approved modern machinery. Built less than one year. Citizens gave a bonus of \$2,500, which I will allow to purchaser of mill. Having an interest in a mill furnishing business, I desire to give it all my time. Full particulars on application.
H. C. DUTTON, Port Austin, Mich.

FOR SALE. GRAY'S HARBOR. Having come into possession of a flour mill, and being wholly unacquainted with the business, I desire to sell either a part or the whole of the property. It is the only flour mill in this, Gray's Harbor, region, and has a good custom and merchant business, which is rapidly increasing. It requires a man who understands handling a merchant and custom mill. There are fifty-one acres of excellent bottom land included in the property. First-class water power.
Address
REV. HIRAM F. WHITE,
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No. 32 Broadway, - NEW YORK CITY.

OBSERVATIONS ON THE COLOR OF WHEAT FLOUR CONSIDERED FROM THE STAND-POINT OF THE MANUFACTURER AND THE MERCHANT.

BY MR. FRANK ASHBY.

I propose firstly to consider

COLOR AS AFFECTED BY THE PROCESSES OF MANUFACTURE, CONTRASTING, OR RATHER COMPARING, AUTOMATIC WITH NON-AUTOMATIC MILLING.

We are too liable to forget that in milling we are dealing with a living organism—that we are not, as quartz crushers, engaged in grinding inorganic rock which simply has to be reduced and granulated; for though the wheat berry lies passive in our hands, to be scrubbed and blown and set hopping over our sieves, and though we design finally to dissect him skin from skin and cell from cell, we must do this tenderly and with the least possible friction, for he is worthy of our respect. Were the iron upon the globe to be reduced to a single ounce, the supply of that metal would be irrecoverably lost, but a single grain of wheat saved, and in a very few years the world's population would be again fed with bread.

I emphasize this because I wish to impress the point that we must give the wheat berry time to die.

Disregard of this fact, I submit, is a defect in our modern automatic roller milling. The wheat berry consisting of a kernel with several protecting skins, germ and embryonic membrane in a state of dormant life, we need, after cutting these asunder from each other, to allow the fine skins or membranes to wither; but the germ should be removed as soon as possible, for in it resides the principle of life, quite independent of the rest of the grain. As a consequence the germ will grow even after being dissected from the grain if only some equivalent nourishment be provided for it; and it is often to be observed that in the spring of the year flour newly ground will, when kept in a warm place, work through the sack showing an amount of restless vitality which the process of disintegration has not wholly destroyed.

To illustrate the thought I am endeavoring to bring forward, as to the need of time to wither the fine membranes and skins, we gather a hazel nut from the bough, and while green pull off the outside husk. You will find that it adheres tenaciously to the shell, but if kept awhile and harvested these separate, the skin withering and the nut hardening.

This, I believe, is the process going on when a sack of meal is kept for a few weeks before dressing, which system was so highly approved by our forefathers; and in modern milling, if the unpurified middlings are kept for a time, the light inner skin still adhering or being in mixture with the small kernel or semolina requires time to dry and wither, after which a much more perfect purification can be effected and the hardened kernel more quickly reduced to flour; and the flour is more granular and is more in the condition suited to the growth of the yeast plant in fermentation.

This pause in the manufacture also enables the miller to make his selections for his highest grades.

But knowing the impossibility in large mills in England to allow this pause and the manual grading or selection, on account of its great cost, the balance of advantage is doubtless on the side of automatic milling, though in our mills at Croydon the finest flour, and that upon which we can place the most dependence, is still made upon a small non-automatic plant.

Would it not be possible to provide an artificial harvesting of the middlings at this point of the reductions by heating the air supplied to purifiers or drying the material over heated rollers? No doubt constant and unremitting acts of purification have largely this drying and harvesting effect, and are not the least of the advantages gained by those millers who follow

up the process of purifying with the greatest continuity to the very end, machines for this fine work being of very modern production, and cannot be too eagerly sought after.

I conclude this branch of the subject by reminding you how wonderful is the life principle in the wheat berry, when wheat grains preserved in the mummies of Egypt for 6,000 years have grown when planted in good soil, and have propagated after their kind as though but of yesterday.

OVER-HEATING IN GRINDING.—The effect of over-heating in manufacture has been so largely treated in other papers that from fear of getting my paper too long and merely repeating others, I forbear going into detail further than to say it is one of the most mischievous forms of discoloration, as it not only lowers the color, but if the heat is over 112 deg. Fahr. the gluten is much injured and loses its power of elasticity.

Over-heating also indicates many other evils sure to be in attendance, such as cutting up the skins, &c. The rule to bear in mind is, make as little flour as possible while the outer skins are present in large proportions, right through the reductions and granulation, grind with light pressure till the woody fibre is scalped, dressed or purified from the chop.

ATMOSPHERIC EFFECT UPON COLOR.—We are familiar with the words in our flour contracts, "Due allowance being made for bleaching," and how almost impossible it is to keep in condition a standard sample of flour unchanged for any length of time, and doubtless the presence of germ and branny particles greatly increase the danger of early deterioration. Upon this subject there is room for much difference of opinion. The deterioration may, perhaps, be called simply decay, but it is not always this, for in pure flours there is much less change than in flours with large admixture of germ and bran.

1. Then I submit the change arising from particles of branny matter, softening with the moisture in the flour and atmosphere, and a consequent fermentation set up, the oxygen then combines with the carbon of the vegetable matter in ferment, and the coloring matter being decomposed first goes off with some of the oily property in carbonic acid gas.

2. In the process of grinding the oily matter residing in the germ (which is largely the coloring property so far as yellow is concerned in it) comes in contact with the alkaline salts which exist in very small quantities in the wheat berry (according to Dr. Kick's analysis), the oily matter is dissolved (soap formed) and the heat of the atmosphere causes exhalation. It may be a debatable point whether the alkalies are free to unite with the oily matter until they are reduced to the ash state, which has been done in the analysis mentioned, but having regard to the fermentation in the first place, I should submit that both processes are concerned in the result. We know that light, temperature and moisture are the agents affecting the changes. Yet no rule or regulation or system is adhered to in keeping flour samples awaiting delivery of bulk, and therefore arbitrators have great difficulty in estimating the degree of bleaching which may have taken place in the bought sample.

Such samples are often packed away in the blue paper, so usually employed in the trade, which paper is not suitable for the purpose, and is, I believe, one of the factors in bleaching the flour so packed. I had a quantity of this analyzed by Mr. Lester Reed, F.I.C., F.C.S., of Croydon. He says:

"I have been doing some experiments with the blue paper, which lead me to the conclusion that some organic coloring matter has been used, very probably indigo, which the blue of the paper closely resembles in its properties.

"I find a trace of sulphur in some form. I am told that such blue paper cannot suitably be used by jewelers for packing

silver articles, in on account of its tarnishing them, although they attribute the effect to arsenic. Now the presence of sulphur might perhaps account (although whether it would do so or not would depend upon the form in which it is present) both for the tarnishing and for the bleaching.

"It is quite unlikely that the bleaching action of the paper is due to chlorine, as that would destroy the blue of the paper, and so can hardly be present in it, and sulphur is, I think, the only other likely thing to account for the effect."

Flour for the above purpose should be packed in canvas bags, placed in a room away from strong light, in an even temperature of, say 60 degs., in not less than 2lb. samples, and in a place free from damp.

PHYSIOLOGICAL CAUSES OF COLOR.—The color of flour is not only affected by the various tints of the wheat used, but also by the impurities with which we find it admixed. Assuming that even after most methods of cleaning there yet remain some of these impurities in what we technically call cleaned wheat, I am about to demonstrate the effect of this upon color in the flour. We commence our process of grinding upon material of the following colors:—Red, yellow of the outer skin, according to the varieties of wheat, and the yellow tint of the germ and oily particles, the white, grey and orange of the gluten and starch cells, and the blue or milky tints of the inner skins, and the black and blue tints added by such impurities as cockle, barley, rye and dirt; these colors are by grinding more or less mixed, and are seen in the flour when marketed.

The flour is then a compound of granular particles differing in color, density, form, size and degree of transparency, and consisting of woody matter, gluten, starch &c., and in color red, yellow, blue and black, with every variety of shade in these colors mixed in various proportions. We examine this compound in a light which may be strong or weak, white light of noonday or tinted with the prismatic rays of early morning or evening, or perhaps in which a light which is tinted by objects from it has reached us by reflection; the eye also being affected by the constant change of the angle of incidence, the retina itself being subject to an extraordinary and interesting number of delusions, by which the judgment is liable often to be misled.

This part of my subject may be illustrated by noticing the effect made upon the eye by particles in motion, which are all of one size, shape and color. Obtain two pieces of perforated zinc, holes, say $\frac{1}{8}$ inch, cut two discs three inches in diameter, rivet together in the centre, and revolve one on the other, notice the number of patterns in the holes associated with each other, and the remarkable half-tones and patterns thrown up from the surface. It would be a hopeless task to attempt to count the numberless combinations possible of form and light and shade upon this simple instrument, and how the rays of light play among the particles.

In this interesting question of permutation of numbers, Rev. S. Kines, Ph. D., mentions that at one period a bell ringer, E. White, had been in charge of the splendid peal of 12 bells in St. Bride's, Fleet st., London, and on his cottage wall was hanging an account of an achievement upon them which came off December 13, 1841, when 5,136 changes were rung by his company in 3 hours and 53 minutes. Now the number of possible changes on 12 bells would be 479,001,600. Supposing 12 men for 300 days in every year were to repeat this, it would take them 300 years to complete all the possible changes upon 12 bells.

The same writer points out that a lock has been supplied to the bank of England, the key of which has 15 levers; there is a million millions to one against the man who attempts to pick it, and this means that if a burglar tries a key every second of his life, night and day from birth to 60 years of age, he would have to live 500

such lives, employing the whole of his seconds of existence, before he could try all the possible changes in the keys with 15 levers. This will help the mind to value the possible changes in the disc zinc before us.

But in a sample of flour we have items of all shapes and sizes, and varying in density—a fact which adds immensely to the possible combinations of light and shade when the flour is presented to the eye in motion and placed in various lights. The great difference, however, remains to be explained, viz., Color. We must, therefore, go back to our original material. Red or a reddish brown is present when wheat has not been carefully cleaned and brushed, too much of the episperm being left upon it; or when in wheat reduction the last break roller has gone too close to the "bone," and the gluten cells have been removed with too much woody matter attached, we then have red.

Yellow is present, but is not so objectionable unless it arises from germ. The gluten cells often have a yellow tint. Blue and black are present when the wheat has been imperfectly cleaned, or when the first break flour, and with it the fine milky blue skin, is present, which skin should undoubtedly be removed by the rotary scalper. This is the best scalper for the first four breaks.

Now with these three colors we can account for all the tints found in flour, for in mixing pigment out of these, three colors can be produced in secondary combination—orange, green, purple; and in the tertiary, brown, broken green, and grey, and a very small quantity of blue and black will affect the whole mass. It has been said by Bacon, that to produce harmony in a landscape all the primary colors must be present; but this is all changed in our work, for to produce harmony in the bakehouse, two at least must be absent.

I will write these colors down again and proceed to cancel them:—Primary, red, yellow, blue or black; secondary, orange, green, purple; tertiary, brown, broken green, grey.

It may be said, whoever saw green or purple flour? These two colors may not be seen in dry flour, nor until the fine dirty powder goes into solution, but green or broken green is often found in the gluten when the starch has been washed out, and a deep brown purple is also occasionally found, while grey is the prevailing tint.

It is well known to painters that representation in all colors can be produced with very few pigments, and that red, yellow, blue and indigo, or lamp black will produce almost any tint required. This again confirms my statement accounting for the great number of shades found in flour.

Now, if by cleaning and washing wheat and making perfect separation of impurities we cancel blue and black, we thus get removed nearly all the objectionable colors, for with these must follow the compounds, green, purple, brown, broken green, and grey.

And then if by polishing and brushing the wheat and purifying, the coloring matter removed of the red color, the orange and foxy tint must follow, and we have left only the pure yellow and white flour—and it is perfectly wonderful to see the result when, in the careful manufacture of flour, this is properly done, when compared with the neglect of so doing.

To demonstrate the neglect, I have here some copper filings, which is the nearest metallic powder I can use to represent the fine red branny particles of the outside coat of the wheat berry, and some powdered sulphur to represent the floury part. Mixed together you get a dirty blue-green, all the beautiful yellow has entirely gone and no sign of red remains, yet, if placed under the microscope it is seen to be merely a mechanical mixture, both, as it were, spoiled in color and yet not changed. And so it is with the flour; the mischief

CONTINUED ON NEXT PAGE.

done by bran-dust is out of all proportion to the weight it brings to the grist.

The remarkable effect of colored particles brought into close mixture is shown in shot silk, where the warp and woof are of different colors. In some light, looking one color, and the slightest change of position giving a different reflection of tint to the observer; and while upon this subject I may be pardoned the digression to instance the interesting fact known to fishermen, that all freshwater fish in our mill-ponds and streams can change color by expanding or contracting their spots of red, yellow, black, and after a few trials match the bottom of the river or pond in which they may be at the moment, no doubt assisted by the medium in which they float, to blend the color to the eye of an observer, to the end of self-preservation; a pigeon's breast and a peacock's plumage also give results showing the effect of small particles differing in color ever changing in position, and delighting the eye with endless changes.

If we need further proof of the mischief arising of mixing low grade with bright colors, I instance the practice of sending back returns to nearly finished early products in our flow sheets, commonly practised in early days of roller-milling experience—and how soon results show us the error. And again, many of us have had to deal with the problem in this way: you have in the mill 50 sacks of fine flour, say patent, 20 sacks of medium, 40 sacks of thirds, and you have an order for 80 sacks of medium flour; you perhaps order 20 sacks of thirds to be mixed with 10 patents, hoping to make a medium flour equal to your stock, but you will be entirely wrong—you will find the 20 bad ears blighted with the east wind swallow up the 10 good ears. "And when they had eaten them up, it could not be known that they had eaten them, but they were still ill-favored as at the beginning."

LIGHT IN WHICH FLOUR IS EXAMINED, AND THE OBJECTS WHICH REFLECT IT.—A surface of flour held in 20 different lights will probably reflect to the eye as many shades or tints, for when we remember that all different objects reflect some, and usually colored light, we see that the tints of our flour under these circumstances depend not only on its own proper color as seen in pure sunlight, but also upon the presence of its surroundings, not merely from contrast, which I shall consider presently, but the tints due to mediums. Note, for instance, an extreme case in the Blue Cavern at Capri.

Thus we find if the flour we wish to examine is a slight red hue, and is in the neighborhood of something green the red will incline to orange. If near some yellow object the tendency will be more deeply marked; and again if the same sample is placed in a light reflected by a blue or violet curtain or blind the result will be a deeper red or slight purple. The amount of light also makes much change in the appearance of flour, and also whether we look close up to them, or some distance away, or whether we examine them with eyes half-closed or wide open.

Flour too, of a bright yellow color would contrast differently when compared against a dull gray flour, in different amounts of light, because the bright flour has in itself, more luminosity, and would look brighter in a dull light than the grey flour, as compared with a former test in a bright light.

Much care is necessary when on the walls of your room or market you can note differing colors reflected, or outside the windows, perhaps, a red brick wall or yellow fence.

CONTRAST AND ASSOCIATION OF COLORS.—Great apparent changes take place by contrast, hence importance of the background.

If we cut out of a sheet of red paper two square pieces, and then place one of them on the sheet from which it has been taken, and place the other upon a green sheet, the red square upon the red sheet will not

look so brilliant as the red square upon the green ground.

In the same way we find that a sample of flour slightly reddish when placed upon a white ground appears darker and more intense, and upon a black ground it becomes tinted somewhat orange red, and upon a dark grey ground it loses intensity and looks a purer white. If you place a sample slightly reddish upon a mahogany table or desk, and a sample of the same flour on a child's slate, holding them about two feet apart, you would not believe them to be the same flour, the background will so completely change their appearance.

Orange tinted flour on a white ground looks darker and reddish, and on a black ground more yellow.

Yellow on a white ground appears darker and more greenish, or in some shades brownish, and on a black ground whiter. Thus you take a sample of flour from the mills and look at it again in your house, place it upon a table or near a curtain, it will look very different; and even a change from a brown suit of clothes to a darker suit, will make, perhaps, to many an unaccountable, and frequently a perplexing alteration.

An interesting account is given by Chevreul in his great work on the simultaneous contrasts of color. He says: "Plain red, violet and blue woven stuffs were given by certain dealers to manufacture with the request that they should ornament them with black patterns; when the goods were returned the dealers complained that the patterns were not black, maintaining that those traced on the red stuffs were green, on the violet dark greenish yellow, and on the blue copper-colored." Chevreul covered the ground with white paper in such a way as to expose only the patterns, when it was found that the color of each pattern was truly black. The effect had been only due to contrast. Thus again contrast of samples of flour with each other, apart from the question of background, is important.

If it is desired to produce a strong effect of contrast, the samples must be placed as near each other as possible, and as you remove them to some distance the difference shades off, in proportion to the distance.

When "Red Dog" is placed close to good orange flour, the red flour looks somewhat purplish, and the orange appears more yellowish.

When orange is close to yellow, the former looks more reddish and the yellow greenish-yellow.

It is a rule of contrast in color that all bright colors in association increase each other in brilliancy, that is they all become more saturated, while all dull colors have an opposite effect, that is, they are made to appear duller and more indistinct; therefore it is evident that contrast may be helpful or harmful. Fine bright samples improve each other's appearance, while impure and dull samples may appear paler and even more dirty.

There is yet another point to call attention to, viz., if a number of narrow slips of flour of differing tints are arranged close together and viewed at such a distance that the blending is more or less accomplished by the eye of the beholder—a very frequent practice in many mills—the tints will differ with each other and mix on the retina of the eye and produce new colors. This is often a very troublesome effect.

In fact this question of contrast can hardly be overstated. A great master upon color says, "The extent of the difficulty can be appreciated when we remember that contrast affects not only the intensity of the color, but its position in the chromatic circle; and also its apparent luminosity, and is particularly lively in the case of the pale colors of nature."

THE EYE.—It seems to me no paper on color would be complete without allusion to the organ with which we are able to enjoy light and the many shades of color.

Sir J. Lubbock's work upon the eyes of animals and insects should be read by all

interested—he considers most creatures are sensible of differences in color, though many can only detect light from darkness and are not able to define a clear image upon the retina or such other nerve of sight as they may possess.

It is also a fact that in nearly every company of 18 persons, one will be blind to some one color or more.

So sensitive is the human retina, it has been estimated that a change of tint is perceived in a forty-billionth of a second, and that 2,000,000 tints are appreciated by the eye and brain. Young and Hemhold's theory of sight is the one now largely accepted, viz., that three sets of nerves exist in the retina for appreciating color, and that they somewhat easily tire, so that if we gaze long on any color, we tire the nerve devoted to measure, as it were, the wave length of that color—so that on thus gazing intently and then closing the eyes or removing the sight upon another background, we see an image of the color farther away on the chromatic scale, or its complementary color, so-called. Thus, look long on a bright red, and we see as its complementary color a blue green, when removing the sight; and in case of green we should see a rose red, and again a long and too constant attention of the eyes upon yellowish flour will produce a misty ghost of a purple shade, troubling the sight and balking the judgment. We thus arrive at another application in our work; who has not shut his eyes in weariness saying, "I cannot look at these samples any more now, they bother me; I really do not know which is the best color!" When we are thus suffering from weariness of the nerve of the retina, our brain is not correctly informed on the subject, and failure must result.

I have only thus dealt with flour in a dry state and in a fine powder.

I must not omit to call attention to the effect of dirt or coloring matter when water is added, and as the most valuable flour test for color is M. Pekar's (and I will assume all are acquainted with it) I need not do more than refer those who are uninformed to Prof. Kick's work, page 251.

But there is one characteristic in this test which has often been noted by me, and my attention has been called to it by other millers; that after wetting a number of samples of flour till the surface is properly saturated, you must make your comparison either at once, or when they are quite dry, and to learn all you can you should compare them in both these conditions; but it will be worse than useless to examine them for the purpose of comparison any time while drying, as the changes that go on in each sample are inconstant and somewhat difficult to account for. I believe it may be due to the dirt or other coloring matter going into solution and staining the particles.

If the floor of a room has been swept ever so clean with a hair broom, yet if it is then washed the water in the pail reveals that much dirt was left; and if a wheat is ever so well cleaned with the dry process and then washed in a good wheat washing machine, the water reveals the dirt still remaining. And M. Pekar's test shows, perhaps, in the very best way how much of free soluble coloring matter is left in the flour, which will discolor the bread when the flour has been put through the final test in the dough.

Before giving a few hints on the care to be exercised in testing flour for color, I should like to remark, after a well-known writer, how our "unconscious education" is enormously in advance of our conscious; our memory of sensations is immense; our recollections of the causes that produce them utterly insignificant; we do not remember the causes mainly because we never know them. It will, I hope, be found my work has been to endeavor to trace back to these causes, and make them plain to us in the subject which I have undertaken in my paper.

And though troublesome in judging flour we cannot regret the difficulty we have to

overcome, for color gradations are the most pleasant and the most precious of the beauties in nature, and the orderly succession of tints gently blending into one another the real delight to every landscape.

Accurately to test flour samples it is needful to reduce to the smallest limits the varying conditions of our surroundings. To this end a few suggestions may be helpful.

1. Choose a certain color for your background or sampling board, and having observed the effect of each tint, use only the one you have become accustomed to.

2. Place all the samples at equal distances, see that they are of the same area, shape and thickness, and not too thin upon the board, as the transmitted light from the background will affect seriously the test; press them to equal density.

3. Take note of the light, both in amount and of any surrounding object by which it is transmitted, reflected or saturated, and try and obtain a northern light free from colored objects.

4. Place your samples where the same light in amount will fall on each, and if you have doubts use a good mirror to assist your judgment viewing them by a reflection.

5. With regard to the eye, rest the nerve by shutting the eye till you see only blackness, or rest them upon a black ground; constantly fear the ghost image.

6. It being impossible to decide about the actual tints of a flour when surrounded by a colored field, it is useful to employ a large piece of black card board with a slit large enough cut in it, and to be held in such a way as to admit to view in the field of vision only the flour you wish to compare.

7. In using M. Pekar's test wait till your test samples are quite dry before you conclude your work.

It is a very interesting investigation. Can any test be found which would enable an analysis of color to be made, and percentages of grades recorded? There are a few good and useful attempts to solve this question now offered us, but there is yet room for an invention which shall produce a perfect standard or color constant.

ABOUT GRAIN-CLEANING MACHINERY.—A valued contributor writes THE U. S. MILLER AND MILLING ENGINEER as follows:

"Although the question of grain cleaning seem to have been worn almost threadbare, still there appears to be a certain amount of uncertainty in choosing a machine. Some handle the grain too roughly, requiring much power to drive them and taking off more of the kernel than is desirable, but turn out well-cleaned grain rapidly. Other machines treat the grain more gently, require little power, are of less capacity and want more machines to do the work. It appears to the writer that it would be more economical and satisfactory in the long run, to use the latter class of machines."

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THE EXHIBITION OF WHEAT AT THE PARIS CONVENTION.

MR. M. J. LAVERRIERE, in the *Paris Journal des Debats*, gives the following account of the wheat exhibit at the recent Convention:

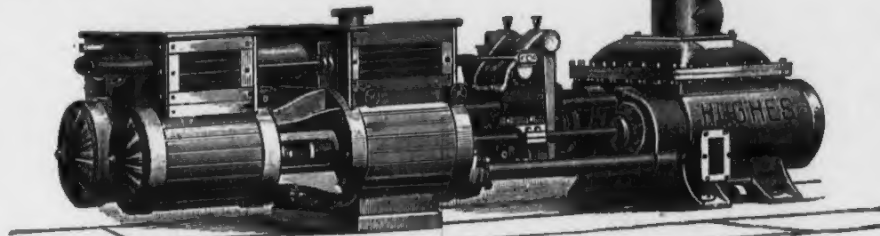
A feature of the Congress was the fine exhibition of samples of cereals, and the various appliances used in the processes of milling. Amongst the varieties of wheat on view there were several which appeared to possess special agricultural interest. The nitrogenous ingredient of wheat, or gluten, is usually present to the extent of from 10 to 11 per cent. of the weight of the grain, as has been shown by the analyses of Professor Aimé Girard. M. Henry L. de Vilmorin has attempted to augment this richness in gluten by establishing new varieties, either by the process of hybridization or by crossing, or by that of selection. In the course of his hybridizing experiments, M. de Vilmorin has obtained two wheats—the autumn Lamed, which is a cross between Noé wheat and Prince Albert; and the Dattel, with white straw, red ear, and white grain, a cross between Prince Albert and Chiddam. The Lamed, which comes from seed, originated at Verrieres in 1872, has a mean percentage of 10.8 of gluten; the Dattel, established in 1874, has 12.06 per cent. of gluten. These two varieties, especially the Dattel, have become more and more cultivated in France, and give excellent results in many different parts of the country. There was, for example, on view a sample of Lamed, recently harvested by M. Fériel, at Cintegabelle, in the Haute-Garonne, upon a calcareous clay, the yield being 32 hectolitres per hectare (=36 bushels per acre), whilst in the alluvial soils of the Garonne, M. Ferran has obtained 28 hectolitres (=31 bushels per acre.) In the Eure-et-Loir, at Tachainville, Dattel has given upon a calcareous soil an average yield of 35 hectolitres (=38 bushels per acre.) M. Perusset, a skilful cultivator in the Ain, has grown Lamed for ten years in a cold, sandy clay soil, and the results have been so satisfactory that he is inclined henceforward to cultivate this variety to the exclusion of others. In Lamed and Dattel, then, we have two cross-bred varieties which appear to be perfectly fixed and permanent, and which go on producing seed possessed of the richness in gluten and the high-yielding qualities characteristic of the original, and this under various conditions of soil and climate.

Not content with having established these two varieties, which have added fresh honors to the ancient renown of the house of Vilmorin, the present accomplished head of the firm placed on view two other varieties which are likely to substantially reinforce the number of successful hybrids. One of these, the Bordier, is the result of crossing the blue wheat (le blé blue, a variety of Noé wheat) with Prince Albert. Bordier is a very hardy variety, tall, rather early, with an elongated white ear and large white grain. The other, the Massue, is a cross between the varieties Browick and Miracle; it is equally hardy with Bordier, but should not be sown late. It produces freely, and its general qualities suffice to place it at the head of the red wheats. These two novelties are not yet in the hands of the trade, so that little is yet known as to their actual agricultural value under varying conditions of soil, situation and climate. Analyses by M. Aubin show Bordier to contain 10.25 per cent. of gluten, and Massue 10.87 per cent. on an average.

Besides the collection of M. de Vilmorin there were several excellent varieties from different districts of France. Among them were the Bordeaux and the Victoria, grown by M. Beaufresne, at St. Jacques in the Marne; the bearded Cham-

pagne, from the canton of Epernay; and the Saumur. The Euro-et-Loire sent, in addition to the Dattel already mentioned, some superb samples of nursery wheat; the Drome sent fine specimens of Saisette, grown near Valence, and the Aude some white Bladette, grown near Carcassonne. The Bouches du Rhone, representing the milling district of Marseilles, sent about 60 samples, whose origin must probably be sought in the Levant, with which Marseilles has a large trading connection. The Haute-Garonne distinguished itself by sending a curious display of old and new varieties. Among the latter were complete specimens, including straw and roots, grown by M. Cornu at Auterive, of a cross between Golden Drops and Richelle; a fine Victoria wheat grown by Mr. Duchan; and some Bordeaux which gave M. Bonnet, 30 hectolitres to the acre (= 33 bushels per acre), at Noé, on the alluvial soil of Garonne. Inasmuch as the general average yield of wheat in France does not exceed sixteen bushels per acre, there appears to be reasonable ground for hoping that the extension of the cultivation of the better yielding varieties which have been indicated will be attended by useful results.

The very beautiful samples of wheat exhibited in some of the foreign sections served to show to what an extent the wheat plant is capable of improvement,



THE HUGHES STEAM PUMP.

and they helped to teach France the lesson that, despite all her protective duties, foreign wheats may prove too attractive for her own millers. The little red wheat of Lovain, Belgium; the Essex, Victoria, and Zelande wheats sent from Groningen and Middleburg (Holland) are not to be lightly regarded by the flour manufacturers of France. England, especially, says M. Laverriere, occupied at the exhibition a position of an entirely superior character, both for the wheats of her own soil and for the thousands of samples of Russian, Indian and American wheats, which she is able to draw to her vast markets. But what was above all put in evidence was the consummate art which English growers display in perfecting their races and varieties of cereals. As with farm animals so with plants, they are instinctive breeders, endowed with special aptitude for improving the living products of the farm. Such a disposition undoubtedly exists also in France, as the examples above cited serve to prove, but the number of those who furnish the testimony is comparatively small. These remarks from so accomplished an authority as M. Laverriere, are of much interest.

In the display of implements and machines there was nothing of greater interest than the Zaphle Fire Extinguisher—"les extincteurs d'incendie Zaphle." They are of very simple construction, and consist of a pump light enough to be carried, by hand to wherever required. A special liquid is employed, and the apparatus is capable of projecting it to a distance of 45 to 50 feet. The charge which is made of eight or nine pints of the extinguishing fluid in three times as much water, is effected in 8 or 10 seconds. The certain action of this mixture has been verified upon the highest authority in Paris, and besides its use for extinguishing fire in cases of emergency, the apparatus can be applied to numerous other purposes. Considering the risk of fire in town and farm granaries, and particularly in the dust-laden atmosphere of mills, it seems surprising that this appliance is not in more general requisition.

THE HUGHES STEAM PUMPS.

THE HUGHES STEAM PUMP CO., of Cleveland, O., recently sent us a catalogue of their steam pumps, which appears to us to be a model one. Condensed into about 60 pages we find illustrations, descriptions, prices, hints to users, etc., which furnish all the information necessary for either the prospective or present user of steam pumps. Full information in regard to ordering, either by mail or telegraph are given, also how to set and use pumps. In a recent letter from the Company they say: "Our pumps are all made heavier and with a longer stroke than any other pump in the market. This we consider a very important feature as it makes less wear for the pump. We have just fitted out the Pioneer Press Building, St. Paul, Minn., the Plankinton House, Milwaukee, Wis., and are building water-works for Albion and Wyandotte, Mich. We have been running our shop day and night for six months, being overstocked with orders for our general, single and duplex work."

We present herewith an illustration of the pump just placed in the Plankinton House in this city. We commend any of

our readers desiring to obtain a steam pump for any purpose to address the HUGHES STEAM PUMP CO., Cleveland, O., for any information desired on the subject.

NEW.—THE W. Trow Company flour mills at Madison, Ind., are being run day and night, turning out every twenty-four hours between 700 and 800 barrels of flour.

BURNED, Sept. 10, Oskamp & Haine's mill at Omaha, Neb. Loss \$25,000.

M. S. EALICK, Lincoln County, Tenn., has sold his flour mill to O. J. Dundas.

EDWARD RANDALL, an employee in the mill at Chippewa Falls, Wis., was probably fatally injured by getting caught in a wheel Sept. 19.

THE FOX RIVER FLOUR & PAPER CO., Appleton, Wis., has sold out its flouring mill interests, and the style is changed to the Fox River Paper Co. The company is doing a large business in wood pulp and paper manufacture.

HENRY C. MCCOOL, of Perryville, Ohio, an inventor and manufacturer of milling machinery, died Sept. 5, 1899. He leaves a family consisting of widow and two children. The business of H. C. McCool Mfg. Co. will go on as usual.

CANADIAN PACIFIC officials state that, that company will not build elevators at Duluth, as has been stated, but will increase the capacity at Fort William 1,500,000 bushels by building an annex to elevator A, which will bring the total storage capacity at the head of lake navigation to nearly 5,000,000 bushels, all owned by the Canadian Pacific Railway.

MR. FRED MESSER, Beloit, Wis., aged 41 years, president and manager of the Beloit Iron Works, one of the most extensive and prosperous institutions of its kind, died Sept. 27th, of typhoid pneumonia, after a week's illness. He was a very hard worker, had overtaxed himself in his duties, and was much debilitated when he was taken sick. His death creates a vacancy not easily filled. He leaves a widow and one child.

A SYNDICATE composed of Arnold, Carlton & McCord, Geo. E. Hoppie & Co., J. F. Simonds & Co., and E. A. Robertson & Co., of Atlanta, Ga., and P. P. Williams & Co., of Vicksburg, Miss., have recently purchased the Atlanta Elevator for \$40,000, including a 4-acre of valuable ground, located in the heart of the city. They have formed a stock company under the name of "Atlanta Elevator & Warehouse Co." J. K. P. Carlton of Arnold, Carlton & McCord, President; Geo. E. Hoppie of Geo. E. Hoppie & Co., Gen'l Mgr'r and Treas'r; Geo. M.

Hope of E. A. Robertson & Co., Auditor. They propose to operate the property at once. Capacity 200,000 bushels.

AT Farmersville, Ala., the mill of J. S. Peakes was burned recently. Loss \$2,500.

R. L. FRAZEE's mill at Frazee City, Minn. was completely destroyed by fire, Oct. 13.

AT West Point, Georgia, Sept. 22, the grist and flour mill of the Union Milling & Manufacturing Company was burned; loss about \$15,000.

AT Omaha, Neb., Sept. 17, the flouring mills of Oskamp & Haines, at Twentieth and Pierce streets, were burned shortly after midnight. Loss \$25,000; insurance \$12,000.

AT Cana, Ind., Sept. 27, the flouring and heading mills of Elmer Wilson, with all the machinery and other materials, were destroyed by an incendiary fire. Loss, \$10,000; no insurance.

AT Delta, N. Y., Aug. 29, the 30 barrel grist mill of E. A. Walsworth, a three story frame building, was destroyed by fire. Loss \$4,000; insurance \$2,000. Cause of fire supposed to be incendiary.

AT 11 P. M. Oct. 5, a steam pipe in the Galaxy flour mill, Minneapolis, burst and suffocated Frank Banks, assistant engineer, and Joseph Evans, fireman. Banks was married last summer and Evans leaves a wife and one child.

AT East Patchogue, L. I. Sept. 11 the old grist mill, which has been a landmark for near a hundred years, was destroyed by fire, with all its contents. It was owned by Henry Swazy. The loss is \$3,000; insured. The cause of the fire is unknown.

AT Decatur, Tex., Sept. 19, D. Rosenberg & Co.'s roller mill was burned. The machinery was new and with the building cost over \$20,000. Five thousand dollars' worth of stock on hand also burned. Insurance, \$9,300, in nine different companies.

AT Elk Lake, Grant County, Minn., Sept. 15, the flour mill of Louis Meeker was destroyed by fire, together with about 80 sacks of flour and 350 bushels of wheat. The fire originated in the top story. Mr. Meeker claims that the mill cost about \$24,000. The insurance was \$8,000.

AT Pittsburg, Pa., Sept. 27, the large building of the Westinghouse Electric Company, situated on Duquesne Way and the Allegheny River and almost in the heart of the city, was partially destroyed by fire, entailing a loss of \$100,000. The building is a five-story brick. The laboratory is situated on the second story. Here the fire originated and completely gutted the third and fourth floors. Both floors were filled with fine electrical machinery, all of which is so badly injured that it will have to be replaced. The loss is fully covered by insurance.

AT Depere, Wis., Sept. 20, fire damaged A. G. Wells' elevator, warehouse and feed mill, and at one time threatened the total destruction of the building and contents. But the heat and smoke permeated the entire building, probably badly damaging thousands of bushels of wheat stored in bins on the upper floors. Water also damaged large quantities of flour, corn, peas and oats. The shafting and elevating machinery in the main building are ruined. The fire is supposed to have started in some sawdust on the outside of the building. The loss is estimated at between \$5,000 and \$8,000, with insurance on stock \$4,000, on building \$4,000.

HARVEST EXCURSION.

The Queen and Crescent will sell Excursion tickets on October 8th at (4 fare)—one fare for the round trip to points in Tennessee, Alabama, Louisiana, Mississippi, Florida and Texas; tickets good for 30 days from date of sale to return. Tickets on sale by agents of connecting lines North and East. This line is the shortest and quickest route to Florida and New Orleans. Three Express Trains each way daily. The route is via the famous Blue Grass Region and Lookout Mountain.

PRINZ'S PATENT IMPROVED COCKLE MACHINE

FOUR SIZES FROM 20 TO 110 BUSHELS PER HOUR CAPACITY.

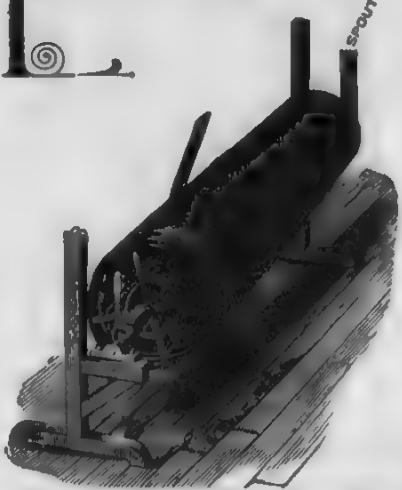
WE GUARANTEE IT WILL TAKE OUT ALL COCKLE, GARLIC AND SIMILAR SEEDS WITHOUT WASTING WHEAT. ONLY MACHINE IN THE WORLD WHICH HAS AN

INDENTED STEEL CYLINDER.

NO COMPARING WITH ZINC CYLINDERS. ONLY TWO BEARINGS TO OIL. SLOW MOTION, LITTLE POWER, SMALL SPACE.

We send you One on Trial. You will SAVE 30 to 50 per cent. of Purchase Money by BUYING this MACHINE.

HANG IT ON THE CEILING, AGAINST THE WALL, OR SET IT ON THE FLOOR—IT WORKS EQUALLY WELL EVERYWHERE.



A Complete Machine for a Small Mill.

WATERTOWN, WIS., Oct. 7, '89.
The Prinz & Rau Mfg. Co.:
Gentlemen—The Cockle Machine works O. K. We are well pleased with it.
Yours truly,
THE GLOBE MILLING CO.

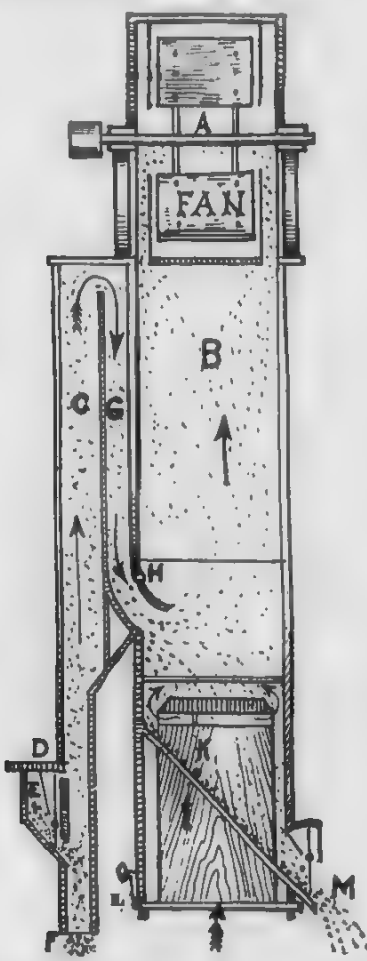
CONROCK, N. Y., June 22, '89.
The Prinz & Rau Mfg. Co.:
Gentlemen—The Cockle Machine which we purchased of you some time ago, is working to our entire satisfaction, and we can recommend your machine to anyone in want of a Cockle Separator. Yours, etc.,
MODEL ROLLER MILLS.

MULBERRY, TENN., Aug. 29, '89.
The Prinz & Rau Mfg. Co.:
Dear Sirs—I have tried the Cockle Machine to my satisfaction, and herewith enclose check for same.
Yours truly,
J. B. THOMSON.

Address, **THE PRINZ & RAU MFG. CO.,** 859-863 East Water St. MILWAUKEE, WIS.

THE BEYNON ASPIRATOR.

This Aspirator makes three separations of the material. It removes all Branny and Fluffy material. It removes the Crease Dirt from the material of the first-break Roll better than any Double Scalper or other machine ever produced. For dusting the break-material as it leaves each Scalper it has no equal, and works to perfection on the different reductions of Germ Stock. Being upright, it requires very little space, and is the lightest running machine in the market.



The material enters at Hopper D, having an Automatic Valve E to prevent the air entering over the material into Flue C, the clean material discharges at F and the air current carries the lighter material over the Return Flue G and entering the Chamber B, which is provided with a Hopper Bottom, and passes into the Supplementary Flue I, while a draft of air from Flue K carries the lighter material up through the Fan A, while the heavier material discharges through the Automatic Valve M, thus making three separations of the material: one at F, one at M, and one through the Fan A.

The Automatic Valve E distributes the feed evenly its entire width, excluding the air from going over the material into the Flue C, consequently securing a fine draft of air its entire length. Valve H is to regulate the draft in Flue C and G. The bottom of Flue K is provided with a Valve L to regulate draft in Flue I.

The Automatic Valve M excludes air from entering the Supplementary Flue I, and is so sensitive as to discharge the smallest quantity of material.

Give capacity of your Mill, and enquire for prices and particulars.

BEYNON & MURPHY, Watertown, Wis.

— ALSO MANUFACTURERS OF THE —

BEYNON ROLLER MILL ADJUSTER

A most perfect device that may be applied to any of the Rollers now in use.

THE BEYNON ELECTRIC RELIEF AND ALARM

An effective preventive for choking Elevators, Conveyors, Spouts, etc.

EVERYBODY'S PAINT BOOK

A new work on INDOOR and OUT-DOOR painting which is designed to teach people how to DO THEIR OWN PAINTING and save the expense of a professional painter. The most practical and valuable work of the kind ever issued. Full directions are given for mixing paints for ALL PURPOSES. Tells all about EXTERIOR PAINTING, KALSOMINING, STAINING, VARNISHING, POLISHING, as well as how to RENOVATE FURNITURE, and how to make a good job of it. Tells all about HOUSE-CLEANING with paint and kalsomine. Full directions are given for making the beautiful SPATTER-WORK pictures in which the Indian and the most interesting. Tells how to paint OUT-BUILDINGS, ROOFS, FARM WAGONS, FARM IMPLEMENTS and CARRIAGES, as well as how to paint a PIANO or ORGAN; how to imitate GROUND GLASS or make paint for BLACKBOARD; GRADING in oak and black walnut, painting to imitation of EBONY, MAHOGANY and ROSE WOOD stain, GILDING, BRONZING and SILVERING. Specially printed beautifully bound. YOU SAVE ITS COST by mail on receipt of price. Use Dollar.

Address, UNITED STATES MILLER, Milwaukee, Wis.

If you are about to build write to the UNITED STATES MILLER for a copy of "Practical Low Cost Houses," and enclose fifty cents in stamps. It will help you.

TO ATLANTA, GA., ONE-HALF FARE.

The Queen and Crescent Route will on October 16th, 23rd and 30th sell excursion tickets from all stations between Cincinnati and Junction City, inclusive to Atlanta and return, good 20 days from date of sale at one fare for the round trip. Full particulars on application to agents Queen and Crescent Route.

Flour and Grain Testing Appliances

AND SPECIALTIES FOR THE

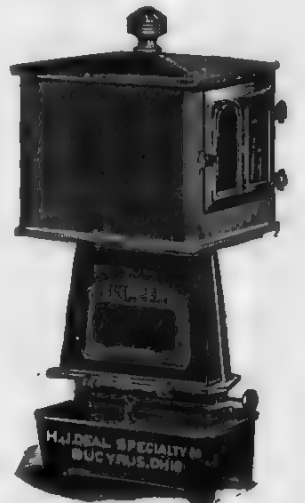
MILLING, FLOUR and GRAIN TRADES.

Deal's Improved Grain Tester



Cannot be Surpassed for Accuracy and Durability.

WRITE FOR
NEW ILLUSTRATED FOLDER "U"
FOR THE
FALL SEASON OF 1889.



Thousands of them in successful use in all parts of the United States and Canada. We make three sizes. Special prices on application.

Now is the Time to Order your Grain Tester for New Wheat.

The Clipper Baking Test for Flour is the Greatest "Eye-Opener"

Invented in this line. Hundreds of them in successful operation among the largest and best mills in the United States and foreign countries.

H. J. DEAL SPECIALTY CO., BUCYRUS, OHIO.

MILLING AND MECHANICAL NOTES.

[Condensed and compiled from various sources for the UNITED STATES MILLER AND MILLING ENGINEER.]

To preserve iron from rust: Dip the article in hot soda water, to cleanse it from oil, then in hot lime water, and dry it thoroughly.

An oil-stone that has been discarded because it has become saturated with oil can be restored by soaking for two or three days in benzine, which eats out the oil.

In sharpening tools, a mixture of glycerine and alcohol is recommended instead of oil, to put upon an oil-stone. The usual proportion is three parts of glycerine to one of alcohol.

The quality of steel goods may be tested by applying nitric acid to the surface. The acid produces a black stain upon good steel, and the blacker the stain, the better is the quality of the metal.

MAKE as little flour as possible while the outer skins are present in large proportions, right through the reductions

and granulation, grind with light pressure till the woody fibre is scalped, sifted, dressed or purified from the chop.

Is it not possible that United States millers are not paying sufficient attention to the value of wheat-washing machines to be used after other cleaning machinery? Is there not a field here open to the inventor of flour-mill machinery? [Editor.]

"N. L." writes that bright steel goods may be preserved from rust if painted with a wax varnish made by dissolving one part of solid paraffin in 15 parts of benzole. This, he states, will not give the goods that greasy feel which has been found so objectionable.

A good varnish to prevent polished metals from rusting is stated by a correspondent to be made as follows: Take 12 parts of resin, 18 of sandarac, and 5 of gum lac. Heat these gradually until they are melted and mixed. Then add 12 parts of turpentine, and, after further heating, 18 parts of rectified alcohol. This varnish should be filtered carefully and kept well corked.

OUR ENGLISH LETTER.

(From our own Correspondent.)

LONDON, Oct. 1, 1889.

AT last an upward movement in the price of wheat appears to have set in, for during the past month there has been a gain in prices on three out of four weeks and yesterday with a demand of 6d more money, the advance in price of some wheat was 2/ over what it was a month ago. The shortness of the quantity of wheat on passage to this country is nearly sufficient to account for the advance which has at present taken place, but some consideration is also given to the small export surpluses of Russia and India, and to the obvious indisposition of American holders of wheat to ship it at current prices. It is further believed that first-rate samples of foreign wheat will be unusually scarce this year. A report from the Russian Department of Agriculture on the crops of Russia, just issued by the British Board of Agriculture is vague and devoid of quantitative estimates, while it appears to be intended to represent the wheat crop as less deficient than private reports continue to declare it to be. Another official report from Austria Hungary represents the wheat crop of Hungary as 35 per cent. less than that of last year and the Austrian crop as 17 per cent. below average. As to the English crop great irregularity is the only one true feature of the 1889 harvest, which is due to the very unsettled and wet weather prevailing, while the corn was being gathered in. At the commencement of September the corn trade suffered severely over the great dock labor strike and on the 9th of September, several of the largest mills in London were obliged to close. A miller who produces at his two mills more than 1½ sacks of flour of 280 lbs. per minute is said to have had on the River Thames 40,000 quarters of which he could not touch a kernel. This strike happily terminated on the 16th of September, after having lasted five weeks, by the men being assured of the *ext a penny an hour* from and after the 4th of November next as well as the other concessions demanded by the men in respect of a minimum engagement of four hours a day. The port of London is slowly recovering from the deadlock into which its trade has been thrown, but the effect of the strike is noticeable in many trades and at the present time many industrial complications exist. Indeed, strikes would almost appear to have been epidemic during the month, and even trades not effected in any direct way by the question in dispute have suffered indirectly from the stoppages of labors in other departments of industry. According to the labor correspondent of the Board of Trade the percentage of unemployed is 2.5 during September against 1.7 for August.

On Sunday afternoon the 22d of September the amalgamated Union of operative bakers and confectioners held a meeting in Hyde Park which was largely attended for the purpose of considering how the condition of the journeyman baker might be improved. The assembly was addressed by John Burns, who moved the following resolution, which was passed by acclamation—"That this meeting is of opinion that the time has arrived when the operative bakers of the metropolis should demand from their employers sixty hours a week and time and half for all over time and this meeting pledges itself to support the Amalgamated Union in its efforts to bring about the same." During the last few days several meetings have been held in different parts of London and a large number of journeyman bakers have joined the union. Notices have been forwarded to the master bakers demanding less hours and more pay, and a month has been given them to make up their minds. Unless these demands are granted by the masters, the journeymen bakers of London say that they will strike work on the 9th of

November and leave London without bread until the masters give way. It is thought by some people that with this and other trade complications the whole business of the United Kingdom will be much disturbed and serious trouble will take place between this and the new year.

During the London strike of dock laborers, it was decided to establish a London Clearing House for grain. Many important firms have given in their adhesion to the scheme. These houses do between them no inconsiderable portion of the grain cargo of the trade of London. The great Greek houses however, hold aloof and it is to be remembered that the previous attempts in the directions of encouraging contracts for future delivery have not met with much favor.

Some of the readers of the UNITED STATES MILLER will remember that some months since I mentioned the fire that burned down the Sun Flour Mills at Waltham Abbey. Since then the Sun Flour Mills Company have sold the property and rebuilt a fine mill at Bromly-by-Bow on the Simon system, which was started in the middle of September. This mill has its roller mills fitted with rolls 40 inches long and 10 inches wide lessen the cost of fire insurance as the fire insurance Companies in England make their calculations on the number of roller mills employed in a mill and do not take into account the length of surface. This is one of the English ways of lessening the amounts paid to the fire officers.

The *Financial Times* of September gives some slashing remarks against the pro-

Mr. J. W. Chatterton, the secretary of the national association of British and Irish Millers has got into disgrace with three-fourths of the millers who went under his care to the Paris congress, on account of not looking after them sufficiently well and not having made proper arrangements for their accommodation. The millers say he studies other interests and not theirs and some go so far as to say he is the cause of the fire premiums for insurance being so high so high all the more. To withstand all the grumbling that has been getting stronger and stronger as time goes on, the secretary used all his influence to get his man in for president and he has succeeded much to the disgust of some of the other millers who are now preparing to have a row at the next council meeting. This meeting, which will be the first after the annual meeting and the one at which the secretary is elected for the year will be held in London during the present month so that in my next letter I may have some very lively doings to report.

Mr. Henry Simon of Manchester the now well-known milling engineer has recently placed on the market a new washing machine which does marvelous work on Indian wheat. The samples I saw yesterday were certainly beautifully done and the separation of the hard pieces of dirt, stones, etc., from the wheat was so well accomplished that there was not one grain of wheat with dirt and stones. The results were shown by samples, the usual way in England, but I will reserve my judgment until I see the machine at work, when I shall be able to give an in-

AUSTRALIA which at present is only sending a small quantity of wheat, is expectant of a fair harvest this Christmas, as favorable rain and the progress of vegetation in the growing crops create good hopes of at least an average crop. Even now the English millers have to look to the Antipodes, as a good wheat harvest there means shipment of bulk in January and February, a supply here at difficult time in the spring season.

Russia keeps on exhibiting strength over its surplus wheat and is now asking one shilling per quarter more money for most sorts. The recent shipments are much below those of last year at this period.

L. MAYGROVE.

THE UNION IRON WORKS, DECATUR, ILL.

THE accompanying engraving represents the works of the Union Iron Works, Decatur, Ill., who are manufacturers of "Western Shellers, Cleaners, Separators and all kinds of Elevator machinery.

This firm make a specialty of the "Western" Sheller, of which they build all sizes, up to those having a capacity of 2,000 bushels per hour, and during the past season they report having received orders from every corn-growing State and Territory in this country, also from several foreign countries, which is evidence of the wide spread good reputation obtained for their production. The firm also gives special attention to the furnishing of plans and specifications and the building of elevators, together with all necessary machinery and supplies for the same.

We call attention to the advertisement on another page of this issue, of the "Western" Mill Sheller, in connection with which we are authorized to state, that the firm will on application, send the machine to any responsible party in the United States, with privilege of testing same, and should it not prove satisfactory, as represented, the firm will pay freight both ways, and all the necessary expenses incurred in setting up and testing the machine. This certainly shows great confidence in their production. The firm employs a force of about 60 men, and are having an excellent trade, as they deserve. The Union Iron Works, will cheerfully respond to all requests for information relative to their manufactures. An illustrated catalogue, containing much valuable information in addition to descriptions of their machinery, will be sent on application.

ITEMS FROM BEYOND SEAS.

THE German War Office, having resolved to erect a military bakery at Potsdam, for the supply of the large garrison there, the Bakers' Association of that place hastily formed a deputation, and hid themselves to the Emperor of Germany, to protect against a measure so menacing to their own interests. They appear, however, to have met with a curt answer.

THE small European household in India finds it convenient to patronize Mohammedan bakers, of whom, however, the bread must be ordered in advance. Sometimes two or three English families combine and hire a baker, paying him a monthly salary and providing him with raw material. The Hindoos eat unleavened bread by mixing flour and baking in thin loaves or cakes on an iron plate over a wood fire.

AN ANCIENT STRIKE.—The antiquity of strikes is attested by an incident in the history of mediæval Strasburg, in Alsace. In 1409 the millers of Hagenowe (a suburb of Strasburg) banded themselves together to get better terms from the bakers. All the millers took an oath by which they bound themselves not to grind without the leave of the union. He who transgressed was to be sent to Coventry—that is to say, with him no miller was to work, eat or drink. The journeymen were included in the union.



THE UNION IRON WORKS, DECATUR, ILL.

posed syndicate, that has been thinking for some few months past of buying up the Pillsbury and other mills. The journal in question picks out Senator Washburn in particular and throws a good deal of mud at that gentleman who has been staying in England for some time past. At the present time there are being launched in London two American companies to control and work at a profit two sets of elevators one set having its terminal in Minneapolis and the other having a line of elevators from Minneapolis to a well-known city in New York state. Whether either scheme will be sufficiently mature to place on the market as stock is a question. It is very difficult to drill into the English mind anything worth taking up, but if it is an absurd scheme or on the face of it a swindle the English public are always willing to subscribe largely and to support it until the crash when they remark that "the investment was not a good one."

The list of applications for shares in the bread union closed on Saturday last so that it is not known yet if the capital of \$500,000 in 100,000 shares of £5 each has been subscribed or not, but no doubt we shall hear in a few days time.

Hitherto the syndicate spirit has been confined to minerals, coal, tin and salt have had their turn, but some clever people with an eye to good business have turned their attention to the more immediate necessities of life, and bread itself is now a monopoly. Already 280 retail bread businesses have been secured for incorporation. The net annual profit of the amalgamating bakeries amount to no less a sum than £91,000.

dependent report. Another new purifier has been invented, but the result of its work is not yet fully established, extensive experiments however are now being carried out at the Grey Friars Works, Ipswich, so that in a few weeks it will be brought on the market with a "flourish of trumpets." As far as the experiments have gone, the inventor says he is more than satisfied with the results. To-day the tenders of three firms of milling engineers, Mr. Henry Simon of Manchester, Messrs. E. R. & F. Turner of London, and Ipswich and Mr. Thomas Robinson & Sons, Limited of Rochdale, for the large co-operative mill at Newcastle were opened, and to-morrow the various milling experts from the three firms of milling engineers will be carpeted before the co-operative society's committee to explain their drawings and make out their cases. Each of the three firms are straining every nerve for the order. Who will get it? is the question asked in several parts of England for on the result depends a number of smaller orders in the south part of the country. Messrs. E. R. & F. Turner stand the best chance at the present time, but Mr. Henry Simon may be able to wrest the order from them. It all depends on the eloquence, tact and judgment of the milling engineers when they are carpeted before the committee, any animosity between the milling engineers must be left out, but if possible each party will give the other a sly push on one side. The committee, which consists of a number of gentlemen are to be the judges, so that great care on the part of each milling engineer will have to be exercised to make the best impression.

MILWAUKEE ITEMS.

THE Wilkin Mfg. Co. are making quite an addition to their works.

GEORGE TEITJEN, representing The Nordyke & Macdon Co., made a brief call Nov. 15.

THE Asmuth Malt & Grain Co. will erect another malt-house in this city on Florida street.

THE Eagle, Duluth, Reliance, Daisy and Gem mills are all running full time. The Jupiter is about ready to start up for a steady run. The repairs in the Phoenix are about completed.

THE Reliance Works of Edw. P. Allis & Co. are constantly being added to. Recently an addition which would be considered a large building by itself was made to accommodate the ever increasing demands of the engine department.

THE Prinz and Rau Mfg Co. have found it necessary to increase their capacity by adding new machinery. They are also compelled to work overtime. Their special machinery for millers' and brewers' use is meeting with high favor.

A GREAT MILWAUKEE INDUSTRY.

Edw. P. Allis & Co.'s Reliance Works.

We have neither time or space in this issue to attempt any description of these works, but simply desire to record here a few items that will give our readers an idea of what is being done right here in our midst without noise, bluster or ostentation. Within the last few weeks the following orders have been received by Messrs. Edw. P. Allis & Co.:

F. Wildermuth, Rosario, Argentine Republic, complete 250 bbl. mill, (8th complete mill sold to same party); A. Campas & Co., New York City, 25 bbl. mill to be sent to Yucatan, Mexico; Gray Milling Co., Standish, Mich., new 50 bbl. mill complete; Oakland Milling Co., Oakland, Mich., new 50 bbl. mill complete; M. Sheehan, Graceville, Minn., rolls, reels and purifiers to remodel 250 bbl. mill; D. J. Rummel, Belleville, Ohio, remodeling 50 bbl. mill; Rapid River Milling Co., Rapid City, S. Dakota, new 125 bbl. mill complete; Dunham & Eggle, Hector, Minn., rolls, reels and purifiers to remodel 50 bbl. mill; Meeker Milling Co., Meeker, Colorado, new 75 bbl. mill complete, with 12x30 Reynolds' Corliss engine; Jacob Strouse & Co., Laketon, Ind., new 50 bbl. mill complete; M. B. Sheffield, Faribault, Minn., 5 Dbl. 9x24 roller mills; Jewell Milling Co., Brooklyn, N. Y., 7 Dbl. 9x30 roller mills; Loring Fletcher & Co., Minneapolis, Minn., 5 Dbl. 9x24 roller mills; James Pye, Minneapolis, Minn., 10 Dbl. roller mills of various sizes; Des Moines Mfg. & Supply Co., Des Moines, Ia., 5 Dbl. roller mills and 2 Reliance Purifiers; Aug. Wolf & Co., Chambersburg, Pa., 3 Dbl. 6x16 and 6x20 roller mills; Capitol Milling Co., Los Angeles, Cal., 2 Dbl. 6x16 roller mills; Diamond Iron Works, Minneapolis, Minn., 3 No. 6 Reliance Purifiers; D. F. Hess, Freeport, Ohio, 2 Dbl. 9x18 roller mills.

A very large number of smaller orders. All of above are of late date.

Have sold far more machinery in this line, than any previous year.

In addition to the immense flour mill business, have now more than \$1,000,000 worth of engine work under contract, including some of the largest engines ever built in America.

Have found it necessary to erect a new machine shop 325 ft. long, 72 ft. wide and two stories high. Great part of the works running day and night and employing 1,500 men.

THE ALFREE CORN MEAL BOLT PURIFIER AND ASPIRATOR.

Will illustrate this machine herewith, and careful inspection of same will interest our readers. In keeping with the introduction and almost general use of rolls for Milling Corn, there is a demand for a better and more advanced method for bolting and purifying corn meal and grits. The adaptation of the ordinary middlings' purifier to this class of work, while not filling all the requirements, has proven conclusively that the sieve is the correct principle of bolting corn goods. The purifier in itself, is not able to take the place of the numerous gravity separators required, still it makes the most approved machine for this work, where the air currents are properly applied by means of an aspirator attachment. After an extended experience with all makes of corn meal bolts and purifiers, "the manufacturers say," we have constructed a machine that is free from the objectionable features to be found in other machines, and at the same time possesses all the sterling qualities of our middlings purifier combined with numerous valuable improvements, including a perfect aspirating device.

This machine consists of three distinct divisions; the first or bolting division consists of a feeding device and supplementary scalping sieve, whereby the grits and coarse meal are kept from passing over the dusting cloth, and thus allowing a perfect dusting of the meal and grits; the air is excluded from

ORGANIZATION OF MILLERS IN THE UNITED STATES.

THE MILLERS' NATIONAL ASSOCIATION.

President—F. L. GREENLEAF,
1st Vice-Pres't—A. R. JAMES,
2d Vice-Pres't—W. M. SANDERSON,
3d Vice-Pres't—GEO. H. PLANT,
Treasurer—S. H. SEAMANS,
Secretary—FRANK BARRY.

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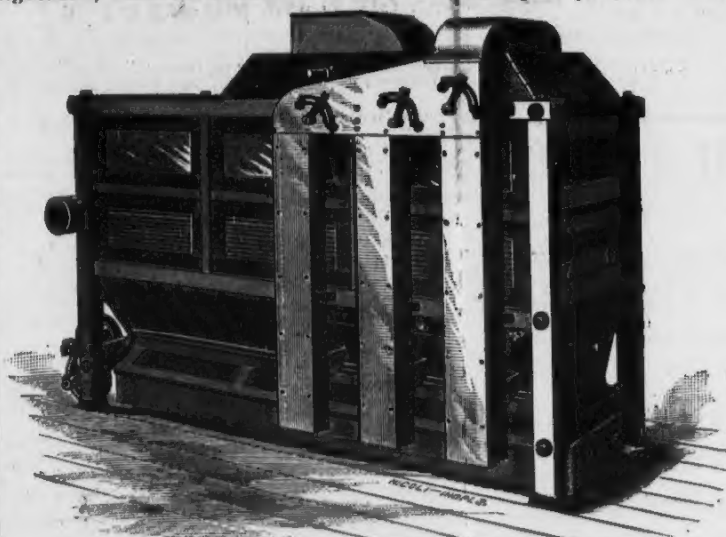
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this division to prevent the loss of flour and fine meal that is usually drawn into the fan. The second or purifying division, is so constructed as to apply the air currents to the stock on the sieve in a scientific manner, and under complete control of the operator, whereby the meal can be thoroughly purified without waste. The third or grading and aspirating division is so constructed as to size the grits evenly and at the same time admits of making any desirable grade; the aspirating device is the result of years of practical observation of the action of air currents and their application to gravity separation, whereby the grits are thoroughly aspirated, and the bran, etc., is caught in a settling chamber within the machine, and thereby prevented from passing into the dust room. The carrying boards and deflections are independent of the sieve, being actuated by a separate eccentric, thus leaving the riddle very light. The cloth cleaning device consists of the most approved type of traveling brushes. The cloth tightening device is most effective and allows the cloth to be tightened, while the machine is in operation.



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ABOUT TRUSTS.

Liability of Owners of Trust Certificates.

ALL classes of the business and social world are interested in having the obligations of Trusts to the law of the country properly understood. The *Engineering and Mining Journal* says: "It has been well settled that trustees and holders of trust certificates alike are unlimited partners, jointly and severally liable for all acts of the association. There is, therefore, a clear legal remedy for all wrongs they may commit. The injury which Trusts may do to their rivals in business and to consumers may thus be brought home to any individual holder of Trust certificates, and he may be made to pay the damage. This is a prospect

that should certainly cause investors to hesitate before parting with their good money in the purchase of such unlimited liability." In view of the threatened craze for this class of securities, such views are not very inviting to credulous owners. Very fortunately, public opposition to the monopolistic efforts of these Trusts and distrust concerning their management have served the useful purpose of preventing a speculative outbreak. The attempts to unload millions of heavily-watered certificates upon an unsuspecting public have not been very successful. Even the banks are shy of making advances upon such flimsy collateral, and the great bulk of these new-fangled securities are still in possession of their original owners. The prime objects of these combinations, in spite of declarations to the contrary, are to eliminate competition as nearly as possible and enhance the values

of the articles they produce. They pretend to be organized simply for the purposes of more economical production and management; their other purposes being unexpressed, but nevertheless understood, unless human nature has completely changed and the Trusts developed into philanthropic institutions. The

courts have frequently declared all combinations of this sort illegal; and this being so, owners of trust certificates have responsibilities placed upon them which it will be well not to lose sight of. The failure of the North American Salt Company to find purchasers for its securities is some indication of how the public are beginning to regard such schemes.—N. Y. *Commercial Bulletin*.

MESSRS. C. F. Johnson & Co., owners of a new 200 bbl. roller-mill at Marshall, Minn., under date of Sept. 27, write us as follows: "We have now got our mill at this point in running order. We are running night and day and orders come in faster than we can fill them. We have built a first-class mill and are manufacturing a high grade of flour. Enclosed please find P. O. order for year's subscription."

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N. Y. Belting and Packing Co., N. Y. Leather Belting Co., W. D. Allen & Co., Agents, 151 Lake Street, Chicago. [Apr. 89.]

W. G. Avery Mfg Co., 10 Vincent st., Cleveland, O., Specialties: Avery Lever Belt Punches, Avery Seamless Elevator Buckets, Belting, Elevator Bolts, &c. [May 89.]

The H. J. Deal Specialty Co., Bucyrus, Ohio. Headquarters for Flour and Grain Testing Appliances, and Specialties for the Milling, Flour and Grain trades. [May 89]

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Iron Mountain, Menominee, 7:20 A. M. 8:45 A. M.

Marinette, Green Bay, 8:10 P. M. 9:35 P. M.

Depere, 8:30 P. M. 9:55 P. M.

Green Bay, Depere, Appleton, 2:00 A. M. 3:25 A. M.

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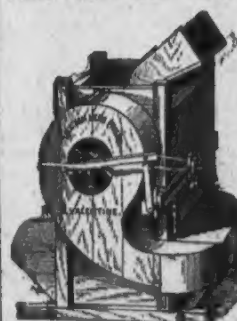
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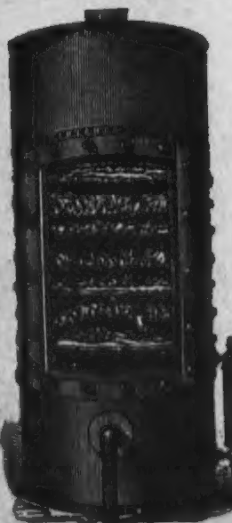
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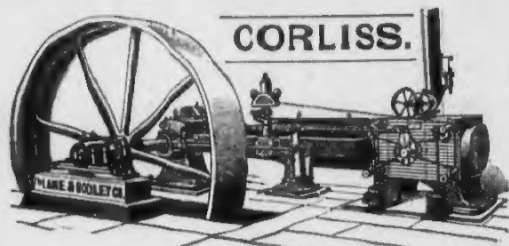


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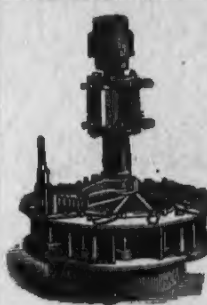
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